IN THE SHADOW OF TERROR: AN EXPLORATION OF POST TRAUMATIC STRESS DISORDER, ATTACHMENT STYLES AND COPING STRATEGIES: RESPONSE TO THE EXPERIENCE OF BEING IN A BOMBING ATTACK AMONG IRAQI PEOPLE

By

FUAAD MOHAMMED FREH

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To

Those civilians who have been killed and those who are still suffering as a result of bombings in Iraq

In the Shadow of Terror: An exploration of Post Traumatic Stress Disorder, Attachment Styles and Coping Strategies: Response to the experience of being in a bombing attack among Iraqi people

Fuaad Mohammed Freh

Abstract:

Despite the widespread prevalence of bombing in Iraq, no study has investigated its psychological impact on civilians. This thesis aimed to address this gap in the literature. Four studies were conducted consequently using civilians in Iraq. The first study aimed to explore the subjective experience in response to the bombing attack. A qualitative approach was taken and twenty semi-structured interviews were employed and analysed using Interpretative Phenomenological Analysis (IPA). This identified seven categories including interpersonal relationships, loss of self, changes in attachment, shattering of world assumptions. Subsequent studies were then conducted to understand these themes as possible predictors of PTSD and psychiatric comorbidity in regards to bombing attacks. The second study was a prospective longitudinal design aimed to investigate the trajectory of PTSD symptoms, psychiatric comorbidity, and attachment styles among survivors. It also aimed to examine the role of a variety of variables, namely shattering of world assumptions, altered self-capacity, perceived social support to predict PTSD and psychiatric comorbidity. One hundred and eighty Iraqi civilians were recruited and assessed approximately 1 month and 5 months after their experience of being in a bombing attack using a battery of questionnaires. A control group data (n=178) of people who had not been exposed to a bombing was also collected. Results

indicated that 19.4% and 57.2% of the participants met the screening criteria for partial and full PTSD symptoms at T1, which declined overtime. The bombing group displayed significantly higher rates of psychiatric comorbidity and insecure attachment than the control group. After controlling for the severity of bombing attack, controllability of events and affect dysregulation significantly predicted both PTSD and psychiatric co-morbidity symptoms. None of these dimensions predicted PTSD and psychiatric co-morbidity at T2. The complementary study 3 looked further at selected predictors indicated by the findings of study 1, namely death anxiety, coping strategies, religious coping and meaning in life. This study employed a longitudinal design in which 185 participants were recruited and assessed approximately 2 months and 7 months after bombing using a package of self-report questionnaires. Results indicated that religious coping and cognitive avoidance had a significant role to play in predicting PTSD and psychiatric comorbidity shortly after the bombing. Death anxiety was also emerged another picture in predicting PTSD and psychiatric comorbidity through mediators, namely religious coping and searching for meaning in life. Literature showed that PTSD and psychological distress are treatable after people had received various forms of professional and personal strategies. Study 4 employed mixed methods in order to provide further understanding regarding the helpful coping strategies that participants had attempted to use to manage their psychological distress. Six participants (n=3 recovered well, n=3 still struggle) were recruited for the qualitative phase and 243 for the quantitative. Social support was found as the most frequent and helpful strategy to manage post-bombing distress, followed by avoiding thinking about the bombing and religious strategies. Different psycho-social factors that hinder or foster recovery between participants were also highlighted. In conclusion, the findings confirmed related studies that, following bombing, there is a high risk that victims develop PTSD and psychiatric co-morbidity symptoms which decline to some extent over time. A variety of factors, such as social support and religious strategies were identified as helpful. However, these were also

related to the victims' prior attachment strategies. Implications for assisting victims and the population of Iraq are offered, in particular the need to support families and friends (social networks) in the context of very limited professional sources of support in a country where terrorism is rife.

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CHAPTER 1: INTRODUCTION

1.1 INTRODUCTION

The people of Iraq have lived under political pressure, prolonged sectarian conflict and occupation for the last few decades. Over this period there have been repeated episodes of wars that have occurred regularly every ten or so years. As a direct result, a myriad of traumatic events have occurred, such as abduction, imprisonment and torture, looting, being held hostage, diseases, hardships and murders. Armed conflict is also increasing in many parts of Iraq, and as a result many civilians have been killed.

In order to understand clearly the reality of violence, conflict, and in the case of this study, people's experience of being in a terrorist bombing attack, it is necessary to understand the cultural "context"- the history and current state of this society, its tribulations and the hardships of its people.

Iraqi society is one of the most ancient societies in history; certainly one of the oldest communities in the Middle East. There is no exact historical period to mark the beginning of violence, hardship and conflict in Iraq. However, the evidence indicates that Iraq's suffering goes back to the early days of the British occupation in late 1914 (Ahmad, Sofi, Sundelin-Wahlsten, & von Knorring, 2000).

Over the last 60 years in particular the Iraqi people have lived through various war events and a series of coups in the 1960s, such that people have been confronted regularly with suffering and bloodshed. The Iraqi people were affected greatly by the brutal war between Iraq and Iran over the period 1980-1988. During this war, more than half a million Iraqis were killed, hundreds of thousands were handicapped and vast economic resources were wasted (Ismael, 2007).

Then, Iraqis were exposed to extermination unprecedented in their history after the attack on Kuwait in the Gulf War of 1991, when Iraq involved its neighbour,

Kuwait. Subsequently, that was followed by the United Nations' sanctions. The UN imposed upon Iraq more than ten years of a tight economic embargo, which affected the lives of the people at all levels and caused emigration of thousands of Iraqis to neighbouring countries and to the west. The Iraqis suffered a lot, experienced the horrors of hunger, poverty and all kinds of diseases (Murthy & Lakshminarayana, 2006). In addition, many abuses of human rights have been evident. Studies have presented evidence that the Gulf War had tremendous mental and physical effects, causing emotional disturbance, and psychological distress among the Iraqi population (DeMause, 1991), and abuses have been reported, such as torture, unexplained disappearances, forced conscription and amputations (Amowitz, Kim, Reis, Asher, & Iacopino, 2004).

The fall of the regime of Saddam Hussein and the occupation by the United States of America in 2003, which was designed to bring peace and democracy to Iraq, has amounted to a humanitarian, security, political and historical disaster. This on-going war has unleashed religious sectarian violence and a deterioration in political, economic and social stability for Iraq and all of its citizens. This war is arguably the deadliest of the 21st century. The sectarian violence and attacks against the American army have caused turmoil, unrest and death to thousands of people. There have been heavy bombing attacks and more than 1,000 cases of suicide bombings documented in the period between 2003 to 2010 with considerable "collateral" damage to civilians. It was documented that the bombing attacks caused 19% (42,928 of 225,789) of all Iraqi civilian casualties and 26% (30,644 of 117,165) of injured civilians. The injured-to-killed ratio for civilians was 2.5 to one person killed from suicide bombs (Hicks, Dardagan, Bagnall, Spagat, & Sloboda, 2011).

Increasingly, the rate of traumatic events such as violence, different forms of political repression including assassinations and murder rises, but the greatest threat to peoples' lives continues to be bombing attacks. Strikes of bombing attacks are one of the most severe terrorist incidents ever experienced on Iraqi soil. These bombings

have killed so many people (see Table 1.1[*]). This is considered the largest loss of life within a few years in the recent history. These explosions have also demolished a lot of buildings and left many shops and factories badly damaged. They have also distorted the neighbouring areas. Moreover, countless of people in the bombing areas have heard the explosions, witnessed the death and destruction of bombing victims.

Table 1.1 Civilian deaths from bombing in Iraq (2003-2013)

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
January	3	597	1176	1543	2925	817	342	263	398	524
February	2	652	1268	1565	2590	1030	375	304	252	356
March	3977	992	854	1935	2675	1610	425	335	308	376
April	3437	1306	1114	1767	2486	1262	505	382	288	392
May	547	657	1323	2247	2799	792	339	379	379	304
June	594	898	1296	2541	2168	696	498	379	386	529
July	651	816	1520	3266	2658	607	403	426	307	466
August	796	863	2261	2818	2400	614	614	516	400	422
September	561	1030	1414	2535	1292	557	332	254	397	396
October	520	1000	1294	2961	1244	547	434	312	365	290
November	488	1605	1461	3024	1084	519	225	306	278	238
December	528	1023	1134	2824	959	575	475	217	388	237

(http://www.iraqbodycount.org/database); [*] Precise numbers are hard to find since most of the data were based on the media reports rather than official reports from Ministry of Health. So, the reported number of casualties/deaths in this research might be affected by the perspective of such media agencies.

Terrorist bombing attack is arguably one of the most overwhelming of traumatic experiences (Edwards, 2007). It has long been established that exposure to bombing is associated with psychological burden (Norris, Friedman, & Watson, 2002), which probably starts in the immediate aftermath of the bombing exposure and may persist in some persons for many years (North et al., 1999). Exposure to bombing may place civilians at risk for short- and long-term psychological

disturbances, including cognitive and emotional disruptions and/or development of mental health problems (Besser & Neria, 2012). The bombing experience also represents an emerging traumatic threat that has the potential to affect randomly large numbers of people. It was suggested that the psychological consequences of such human-made disasters are likely to be more profound in the general population than after a natural disaster (Miguel-Tobal et al., 2006).

The extensive and extreme nature of the bombings in Iraq, beside the profound anticipated effects among its survivors, is making this subject particularly critical to investigate. Continuation of these bombings among civilians provided, albeit sad and unfortunate, an opportunity to explore the impact of terrorist bombing on mental health over time in high-exposure bombing victims while civilians maintain their habitual lifestyles in the face of the threat of further on-going bombing (and other life disasters).

Exploring the psychological impact of the bombing attack experience will offer better understanding about this experience and provide important implications for delivery of mental health services for survivors of this community and also for other victims all over the world, since terrorist bombing attacks are a global concern. The World Mental Health survey initiative (WMH) guidelines for supportive and palliative care services suggest that all health and social care professionals should be able to understand and recognize the psychological stressors that these bombing attacks and hardships bring, particularly in Iraq (Alhasnawi et al., 2009).

Despite the evidence in research that exposure to bombing attack can lead to high levels of stress and the development of PTSD symptoms (Shahar, Cohen, Grogan, Barile, & Henrich, 2009), psychological studies have not sufficiently studied the effects of the experience on mental health among Iraqi civilians (Alhasnawi et al., 2009). The current psychological literature has also provided limited knowledge about the effect of man-made traumatic events in the Middle East and particularly in Iraq (Altawil, Harrold, & Samara, 2008; Murthy & Lakshminarayana, 2006). Moreover,

little is known about the impact of the complicated situations that the Iraqi people have been experiencing, and the prevalence of PTSD and co-morbidity. There is no knowledge on the extent to which these PTSD and co-morbid symptoms persist over time. Furthermore, there is not enough data regarding the psychological effects of aftermath exposure of the civilians in Iraq to the bombing attacks. In addition, the current literature has offered no information on the role that coping plays in the link between stress and PTSD symptoms and psychiatric co-morbidity among the bombing survivors in Iraq. This will be discussed in detail in Chapter 2.

The research in this thesis was concerned to address these gaps in literature by exploring how Iraqi civilians who have experienced a potentially trauma inducing event of being in a bomb attack make sense of their experience and identify their ways of trying to cope. The specific aims of each of the studies relating to these areas will be discussed in more detail later.

1.2 Impacts of widespread potential traumatic events among Iraqis

The highly dangerous circumstances and the potential experience of traumatic reactions have the ability to cause extensive and complex psychological disability more than any major disease (Smith, Perrin, Yule, & Rabe-Hesketh, 2001). The WHO estimated that, in the situations of wars and armed conflicts throughout the world, 10% of the people who experience highly dangerous event/s will have serious mental health problems. The WHO claimed that these dangerous circumstances will hinder the ability of the individuals to function effectively (Kessler & Üstün, 2004).

People in Iraq have been experiencing challenges, problems, great adversity and dangers in their lives. Among the consequences of these hardships, the impact on the mental health of the civilian population was one of the most significant. After suffering these ordeals, especially within the last few years, the general population has shown an increase in the prevalence of mental disorders. People, including

children and young adults, are at high risk of psychological and emotional instability. A study has estimated that one out of three people in Iraq could be vulnerable to develop some form of PTSD during their life time (Alhasnawi et al., 2009). Other vulnerable groups are the elderly and the disabled. Studies also claimed that 1- 47% of Iraqi people have been exposed to a potentially major traumatic event, which points to the volatile and violent environment they are living in, alongside this 14% of its children met the diagnostic criteria of PTSD (Razoki, 2010).

A fundamental question is whether such events inevitably lead to a deterioration in mental health or whether some forms of resilience and coping emerge. For example, a hopeful conceptualization is that people may develop resilience and adapt in one way or another to stressful events because of the continual exposure to such events, through a form of "psychological immunization" (Okasha & Elkholy, 2012). However, such a simple view is questionable.

The widespread experience of potentially traumatic events in Iraq has had a major impact on health and well-being, included long-term physical and psychological harm to its adults. According to the WHO, more than half a million children in Iraq might be in need of clinical assistance, including psychotherapy. Moreover, there are approximately 5.7 million Iraqi children studying at primary and secondary schools; it has been speculated that at least 10% of them are in dire need of psychotherapy as a result of experiencing highly dangerous (potential trauma inducing) events (Alhasnawi et al., 2009).

Beside the widespread experience of PTSD in the population and the considerable impacts on mental health, the consequences of such experience have reached family life, work and culture, and might affect future generations. Consecutive dangerous events in Iraq have destroyed its communities, economy, families, and often disrupted the development of the social fabric. The majority of Iraqi institutions and buildings have been destroyed. More than 2.77 million people have been displaced within the country; alongside that, about 3 million, a total of

nearly 15% of the population, have left the country either because of the sectarian conflict or because of the military operations (Morton & Burnham, 2008). Iraq now has the largest number of prisons in the world, with 37 prisons and 400,000 imprisoned (6,500 of whom are teenagers and 10,000 women).

Since early 2004, Iraq has been in a deep catastrophe. The collapse of the economy has seen dramatic declines in living conditions, with soaring unemployment and poverty rates. The unemployment rate has reached 40%. Socio-economic and humanitarian circumstances have deteriorated more rapidly. The rate of illiteracy has increased. In 2008 and 2009 the number of illiterate people has mounted to 5 million, of whom approximately 60%- 65% are women. Civil violence and the rate of suicide and other self-inflicted injures have dramatically increased (463 burning suicide). Around 5 million children are orphans, while 500,000 are homeless and around a million children are working in different fields (Ministry of Health, Iraq http://www.moh.gov.iq).

Undoubtedly, such hardships, trauma inducing and widespread experience of PTSD have left behind a fractured and fragmented society, with troubles in the family relations. The permanence of danger and life-threatening events has also led to aggravation of disintegration on a social level and unsettled the social fabric. The psychological instability and the dispersion of personal relations have the ability to threaten the feeling of basic security, especially for adolescents and children and might affect their view of the future (Hoskins, 1997).

Living conditions now in Iraq, generally, are deplorable and slumping to unknown levels. Furthermore, Iraqi families have been suffering a variety of increasingly highly dangerous events. Unfortunately, no one has really been able to prevent such suffering or to substantially relieve the suffering of this society. This could be due to the uneasy circumstances that they have been facing. So, the situation continues to be more than strained. It is indeed very critical, restless, and questionable in which direction the country will go. The trend that Iraq slips into a civil

war is feared. All this concern and uncertainty might not help the Iraqi people to develop positive mental health and this could affect the whole culture.

1.3 How Do They Cope?

People face problems, challenges, and dangers in their lives, but employ various strategies to cope with them. They actively modify their cognitive and emotional responses and shape social and behavioural outcomes in order to prevent, avoid, and also control stressors. They also try to use normative adaptive defense mechanisms to overcome their problems (Folkman, Lazarus, Gruen, & DeLongis, 1986). Moreover, they used coping strategies to develop positive thinking and behaviour accepted by society (Muldoon & Downes, 2007). On the other hand, weaker coping ability might lead to the development of PTSD symptoms (Galea, Nandi, & Vlahov, 2005).

A series of literature has shown a significant link between effective coping strategies and the development of PTSD symptoms after exposure to dangerous events (Benight et al., 2000; Ginzburg, Solomon, & Bleich, 2002). Galea et al. (2005) proposed that weaker coping ability has a significant correlation with the onset of PTSD symptoms which, in turn, predicts psychological distress and might increase the susceptibility to exacerbations of their mental health problems. Thus, examining coping is important because the likelihood of people to develop PTSD symptoms and other mental health problems has been shown to be related to individual coping strategies (Tiet et al., 2006).

Perhaps not surprisingly, through a long time of conflict in Iraq, dangerous and life threatening events and a myriad of mental health problems, some strategies for dealing with such problems have developed. These strategies involve activities or mental states. Generally, the habitual strategies do seem to help people to manage and defuse stressful situations they find themselves in, and moreover have a

significant role to play in tolerating difficult situations and dangers alike (Ginzburg et al., 2002). However, to date, no research has directly assessed coping strategies among Iraqi civilians following bombing attack experience. Full details about the coping strategies will be discussed in chapter 2.

It should also be mentioned that little literature has been presented among Iraqi civilians regarding the professional coping strategies that bombing survivors have employed to help manage the psychological distress. In fact, only one study was carried out to determine what kind of personal coping strategies were effective to alleviate psychological stress and to protect psychological intactness among Kurdish children who were exposed to the chemical bombardment of Halabja in March 1988 (Punamäki, Muhammed, & Abdulrahman, 2004).

1.4 Research Approach

The context of danger is a valuable area of research to study and raises important questions about the effects of traumatic events on mental health in unselected populations. Hence, after dangerous events and conflicts in many parts of the world, enormous amounts of research have been conducted. The outcomes of these studies suggest that living in such conditions results in considerable risk of mental health problems, including post-traumatic stress disorder (PTSD), major depression, substance abuse, impairment in social functioning and in the ability to work, and could increase use of health care services (North et al., 2004; North et al., 2005).

However, psychological reactions may strongly vary from one community to another and people's reactions could also differ from one trauma situation to another (Page, Kaplan, Erdogan, & Guler, 2009). Psychologists, therefore, have been trying to investigate the impact of each traumatic event, whether natural or man-made, on mental health, but their studies were conducted, for a long time, among veterans

years after their military service had ended (Arbisi, Polusny, Erbes, Thuras, & Reddy, 2011; Booth-Kewley, Larson, Highfill-McRoy, Garland, & Gaskin, 2010; Thomas et al., 2010; Vinokur, Pierce, Lewandowski-Romps, Hobfoll, & Galea, 2011) and their family members (Church, 2010).

The recent terrorist bombing activities that hit many cities around the world, such as London, Madrid and New York City, as well as numerous other cities in Europe, Asia and North America, highlighted the need for studies to investigate the effect of these attacks on mental health among civilians who are involved in this experience. The psychiatric impacts of terrorist violence have been repeatedly noted. Results of these studies, in brief, suggest that terrorist bombing attacks have widespread mental health effects among survivors. More precisely, studies found that after exposure to the bombing, symptoms of stress and depression were evident in individuals (Knudsen, Roman, Johnson, & Ducharme, 2005), they continued to meet criteria for subsyndromal post-traumatic stress disorder (Galea, Vlahov, & Resnick, 2003), suffered substantial functional impairment, feeling of threat (Rubin, Brewin, Greenberg, Simpson, & Wessely, 2005), traumatic grief, panic, phobias, generalised anxiety disorder, substance misuse and developed psychiatric disorders (DeLisi et al., 2003). In these studies, PTSD appeared to be the most common disorder attributable to the attack, followed by depression.

Verily, terrorist bombing attacks have occurred all over the world, but they have been particularly numerous in Iraq (Whalley & Brewin, 2007). Despite this fact, gaps still exist in the understanding of the full psychosocial effect of such bombing attacks among civilians in Iraq. It has been found that there is no systematic research into its effects on victims and on the wider community. Furthermore, research on PTSD, coping strategies and attachment styles of those who have been exposed to bomb attacks has also not been attempted. This evidence now permits some estimate to be made of the mental health consequences of terrorism and of the challenge for psychiatric services.

The current state of knowledge in this field has been considered, along with the researcher's familiarisation with the range of methodologies that have been employed in related research studies. This has been employed to clarify the choice of research questions for the empirical studies. Additionally, amount of literature on PTSD, attachment styles and coping strategies had also been considered to determine the research questions.

To understand the nature of the bombing experience as well as develop some general findings about it, this thesis has utilised a mixed method approach by using qualitative and quantitative data collection to explore a relatively under-researched area, and was therefore progressive in its design. Four studies have been conducted accordingly.

The first qualitative study was employed to generate rich data regarding the nature of people's experience and further, to generate specific variables for detailed quantitative exploration in phase 2, in which two studies were employed. Subsequently, the third phase attempted to explore in further detail, qualitatively and quantitatively, salient general features of the experience identified in phases 1 and 2 by investigating what kind of professional and social coping strategies were effective and helpful in protecting mental health and reducing psychological distress. This phase employed one study, in which the researcher explored the best intervention/s from the participant's perspective.

This is consistent with principles of innovative research using a mixed methodology design to explore under-researched topics. Using the mixed methods approach has increasingly accelerated and led to superior research over the last decade. An extensive range of published papers and books, within social science and health, were conducted (Johnson & Onwuegbuzie, 2004).

The scientific advantages of using this method have been dramatically acknowledged. It provides an appropriate method to address health problems, gives a greater understanding of outcomes and moreover, enables the researcher to

investigate the complex research question in more flexible conditions. Bartholomew and Brown (2012) claimed that the greater future of health research will be for the one who employs the mixed methodology approach.

1.5 Generate Outcomes

Iraqis have not had the opportunity to reconstruct everything that has been destroyed throughout the years of drastic life circumstances, wars and continual internal and external conflict. They are currently in dire need of professional service institutions to provide psychological, social and health services for the victims of such hardships. The need is also of great importance for effective programs and plans to deal with the psychological trauma and its devastating effects.

The long term violence, war and occupation have resulted in Iraqis being exposed to traumatic events which violate every person's rights: the right to live safely, to learn, to be healthy, to develop his/her personality, to be protected, and the right of enjoyment. It is unlikely that anyone could have a normal life in Iraq in the current circumstances. The future psychological well-being of Iraqi people is being compromised by on-going traumatic experiences.

However, studying the extent of PTSD could be the first step to provide early treatment and to plan preventive measures. So, it was hoped that the outcomes of this project would unveil some of the psychological effects of such a severe experience as a bombing attack, and the ways of coping with it, particularly as Iraq lacks such studies (study 1). Such knowing and awareness, if implemented, would help bombing survivors and give them a proper way to face and cope with the difficulties and unpleasant consequences of these attacks (study 4). Furthermore, it would give them hope that the circle of suffering and upsetting emotions would end (study 2 and 3). Otherwise, if this traumatised society receives no psychological help in the near future, the community will become too weak to recover.

One must acknowledge the original contribution that this proposed study will make to existing PTSD literature. The results of the proposed study will address the gaps in knowledge and existing PTSD literature that were outlined previously. Also, this study will add to the PTSD literature in its attempts to examine the link between adult attachment and psychopathology by examining the area of posttraumatic stress, the lack of feeling secure in interpersonal relations, and existential issues e.g. meaning in life and death anxiety. It is also worth mentioning that the findings of the present study will help academics, psychologists and health researchers, particularly in Iraq, to expand their knowledge about the nature of the mental health problems of this community.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

Although the concept of psychological trauma has been described in the psychological literature since ancient times, the systematic research into PTSD did not start until the 1980s (Koenen, Stellman, Sommer, & Stellman, 2008). It was then that PTSD as a disorder was included in the Diagnostic and Statistical Manual of Mental Disorders-Third Edition (DSM-III) by the APA (American Psychiatric Association, 1980). Since then, researchers have given more consideration to an exploration of the outcomes of exposure to dangerous events, especially the role they may play out in developing psychological stresses (Koenen et al., 2008). One important impetus for this research was prompted by the effects of the Vietnam War on American soldiers.

Since then, a body of empirical research has been accumulated and much of this work sought to understand the psychological sequelae of exposure to traumatic events among people who had fought in or been victims of war and violent conflict. The general findings of most of these studies indicated that a surprisingly high prevalence of people experienced traumatic events (dangerous and disturbing) during their lives. A significant number of those people who were exposed to danger continued to experience psychological distress which can be regarded as a traumatic reaction (Hobfoll et al., 1991; Langley, 1982). Early terms such as ''nervous shock'', ''shell shock'', ''traumatic neurosis'' and ''rape-related fear and anxiety'' were used to describe the psychological symptoms observed after traumatic events (Galea et al., 2005).

This chapter will present detailed overviews of all these ideas by describing and reviewing the following subjects:

- *Historical perspective and evolution of PTSD*
  - The development of the concept of PTSD
  - Psychological or organic
- *Definition of PTSD*
- *Diagnosis of PTSD*
- *Prevalence of PTSD among the general population*
- *What impact has PTSD had? A review of its severity and consequences*
- *PTSD research in Iraq*
- *Post-bombing literature in Iraq*
- *Mental health services in Iraq*
- *What impact can the experience of bombing attack leave among civilians?*
- *Coping strategies/ How are people coping with bombing attacks?*
- *Posttraumatic stress and attachment styles*
- *Summary of the chapter*

2.2 Historical perspective and evolution of PTSD

Historically, the concept of PTSD has been surrounded by many controversial and contested issues. This section covers the historical development of this concept.

2.2.1 The Development of the concept of PTSD

Perhaps one of the oldest references to psychological distress that is similar to the modern conceptualisation of PTSD in the literature was reported by Herodotus. He described the 'hysterical' reaction of one of the Athens veterans when he experienced blindness as a result of a sudden confrontation with a burly enemy. He

suggested that this reaction was a result of feeling that he is inevitably dead (Henry, 1985).

Serious psychological distress has also been seen to be caused by severe life stressors. The Sumerians, for example, who lived in the Mesopotamia, south of Iraq now, in 2000 BC, lamented over the destruction of Nippur and showed severe anguish, grief and suffering among the population (Kramer, 1981). The third documented case of psychological distress to be found in the literature was reported in 1900 BC by an Egyptian medic, who described a hysterical reaction to a dangerous event (Dietrich, 2004).

Connecting these examples was the observation of the emergence of physical symptoms, but without a clear physical or medically explainable cause. This led to the belief that exposure of the individual to an overwhelmingly dangerous and anxiety provoking event (e.g. natural or man-made disasters) could produce a condition of continual long-term suffering and destruction of the psychological and physical well-being of the person. Physicians subsequently began dealing with the people who had been exposed to highly dangerous or distressing events initially without referring clearly to the name of "traumatic stress" and without knowing exactly the source of distress.

2.2.2 Psychological or organic

The causes of such conditions, initially described as ‘hysterical’ reactions were considered in terms of conflicting explanations: whether they were caused by psychological or/and organic factors. John Erichsen claimed in 1866 that people who were exposed to railway crashes had emotional distress syndrome and the source of this distress was organic. On the contrary, Page (1885) disagreed and believed that the source of this distress was psychological in origin rather than organic. These controversial two opinions about the source of patients' emotional distress led

Oppenheim (1911) to rename the syndrome ‘traumatic neurosis’. Most assuredly, this was the first time that the word trauma was used. Jean-Martin noticed (1886) a similar set of symptoms as these for his patients which were later identified by Oppenheim. However, he did not see these symptoms as trauma but as a particular type of hysteria or neurasthenia (Davison, Neale, & Kring, 2004).

Attempts of Pierre Janet as early as the 19th century articulated the basic principles of trauma based on his observations of hysterical patients. He drew attention to the concept "hysteria" through his studies of the childhood traumatic experience (Van der Kolk, Weisaeth, & Van der Hart, 1996). He concluded that highly dangerous events could cause hysteria, dissociation and emotional distress. Thereafter, extensive and intensive studies have tried to investigate the relationship between psychological trauma and hysteria (Lasiuk & Hegadoren, 2006).

Freud and Janet have both contributed to the understanding of psychological trauma. They referred to the pathological role which is caused by past psychological traumas and forgotten memories. Interestingly, the core of PTSD symptoms had been described by Freud in 1921, in his original model of neurosis, known as seduction theory. He suggested that the origin of traumatic neuroses IS brought out by a past trauma that happened during childhood. So, the exclusive focus should be on past events as causes. He also suggested that recent stress events could be intensely distressing to the person and unable to be treated by psychoanalysis due to the accumulation of the distress and unpleasant emotions. In other words, the recent distress could stimulate the past events. Later on, Freud's thinking influenced both the Diagnostic and Statistical Manual of Mental Disorders-I (DSM-I) and Diagnostic and Statistical Manual of Mental Disorders-II (DSM-II) classification of stress response syndromes as transient reactive processes (Wilson, 1994). However, Freud's focus was on the childhood trauma rather than the event itself as a trigger.

In literature, the term “traumatic event” is widely used. In this thesis care will be taken to clarify that events can be highly physically and emotionally dangerous

and constitute a Potentially Traumatic Event (PTE). However, trauma does not lie in the event but in people's responses to events. This is a central issue for this thesis since a core question is why some people clearly develop traumatic reactions to experiencing a highly dangerous event, such as a bomb attack but others appear not to.

Despite the recognition that the roots of traumatic stress studies go back to Pierre Janet and the contributions of the better understanding of psychological trauma by Freud, systematic studies of the impact of traumatic events did not surface until the 20th century. It was noticed that major social disasters can have significant impact in producing traumatic states. So a considerable interest of the study of trauma emerged, in particular during both World Wars, and most recently following the Vietnam War. Veterans of the First World War who experienced suffering from war neuroses often developed amnesia for the trauma and behaved as if they were still in the combat. Studies also showed that those veterans had symptoms similar to hysterical symptoms (Herman, 2001).

Huge numbers of people died in these wars. The prevalence of psychiatric problems was considerable, to the extent that people began to realise that everybody could be mentally fragile and the war could be traumatic to everyone. Psychologists pointed, for the study of psychological trauma, away from the biological or characterological inadequacies of the individual to the role of the social environment. Grinker and Spiegel (1944) were attempting to draw attention to the importance of the social support and interpersonal relationships in altering psychological and physiological behaviour. They believed that the social environment could help the veterans to cope with the problems and trauma of war (Lasiuk & Hegadoren, 2006).

In the 1960s, researchers began to investigate the effects of other traumas. Some reports were published on traumas such as burns and accidents e.g. the study of children’s reactions to the London blitz by Anna Freud and Dorothy Burlingham (Van der Kolk et al., 1996) and rape (Burgess & Holmstrom, 1974).

In the 1970s, the psychological effects of the Vietnam War raised, once again, the attention of the mental health professionals to develop knowledge about the effects of psychological trauma. They noticed that the American soldiers who were involved in the war had trauma response symptoms nine to thirty months after their demobilization from the army (Gray, Bolton, & Litz, 2004). These findings surprised the researchers. The expectation was that people would have these symptoms within two or three days of the experience, not after long periods, even of up to two or three years. Further, studies indicated that almost half a million of those who took part in the war still suffered these symptoms though more than 35 years had elapsed (Weiten, 2004).

In 1980, important progress had been made in the scientific studies of human reactions to traumatic events. The mutual influence of the human rights and anti-war sentiments prompted mental health professionals to think again about the effects of exposure to trauma/s for both civilians and veterans. And therefore, the trauma response syndromes whether among civilian, e.g. rape, abused child, or veterans were subsumed for the first time into the diagnosis of PTSD in DSM-III (APA, 1980).

Since then, and because of the reciprocal psychological and physiological effects of PTSD, studies of PTSD have been increasing rapidly (Flannery, 1999). The focus of studies was on war experiences among veterans as in the Vietnam War (Kulka et al., 1990). However, it was noticed that the symptoms of PTSD are also evident as a response to cases of acute tension other than war. Studies were conducted on victims of forced relocation, mass violence (Kessler, 2000), disasters e.g. floods, transportation accidents (Smith & Freedy, 2000), rape (Foa, Rothman, Riggs, & Murdock, 1991), child abuse (Zlotnick, 1997), witnessing somebody dying, marital infidelity, Intimate Partner Violence (IPV) and others (Tagay, Arntzen, Mewes, & Senf, 2008). Galea et al. (2005) have provided an empirical review of the studies that were conducted between 1980, when PTSD was first codified as a disorder, and 2003. It summarises that experiences of the above traumatic events may result in a

wide range of mental and physical health consequences and psychological problems. It also shows that post-traumatic stress disorder (PTSD) is the most debilitating psychological disorder that occurs after traumatic events and disasters.

The growing threat of terrorism worldwide in the late 1990s and the early years of the second millennium has heightened the health professional's awareness of disasters as a potentially important determinant of population health and suggests a pressing need both to identify key areas of consensus in postdisaster research and to highlight areas that require additional studies (Galea et al., 2005). As a result, a substantial body of literature after wars e.g. war in Iraq and Afghanistan (Thomas et al., 2010) and terrorist attacks e.g. September 11, 2001 in New York City (Cardenas, Williams, Wilson, Fanouraki, & Singh, 2003) were conducted. These studies had a profound influence on the empirical work of PTSD. However, much of this work sought to understand the psychological sequelae of exposure to dangerous events among persons who had fought in or been the victims of war and violent conflict.

It should be noted that throughout the development of the concept of PTSD since 1980, some amendments were conducted in the DSM-III-R. The first amendment focused on the avoidance process which was considered a significant indicator to denote PTSD (e.g. avoiding things, thoughts, feelings, situations related with the original traumatic event). Secondly, for the first time, DSM-III-R dealt with this disorder in children. And thirdly, in 1994 the classification of PTSD became restricted such that a diagnosis of PTSD required that the symptoms had existed continuously for more than one month.

2.3 Definition of PTSD

Because of the association of posttraumatic stress disorder with the Vietnam War, the concept has variously been called Post Vietnam Syndrome, Post Vietnam Traumatic Stress, Post-Concentration Camps Syndrome, Post-Combat Stress Response and Traumatic Neurosis (Spitzer, First, & Wakefield, 2007). Finally, the concept has settled as a diagnostic entity on PTSD (World Health Organization, 1992). Likewise, its definition varied slightly across studies, since its introduction in DSM-III, due to changes in the concept several times.

The original definition of PTSD, which has been adopted in most studies, is that of a psychiatric disorder displayed when an individual is exposed to dangerous events in which they are unable to fully recover from its effects. However, discussions about the validity of the definition and the nature of the traumatic experience have continued (Davidson & Foa, 1991).

In literature, definitions of PTSD were summarized into two ways: First, relating to the potentially traumatic events: "A psychological disorder affecting individuals who have experienced or witnessed profoundly traumatic events, such as torture, murder, rape, or wartime combat, characterized by recurrent flashbacks of the traumatic event, nightmares, irritability, anxiety, fatigue, forgetfulness and social withdrawal" or "an anxiety disorder that some people develop after seeing or living through an event that caused or threatened serious harm or death. Second, definitions containing traumatic events and non-traumatic events. This type, represented according to the DSM-IV-TR (APA, 2000), was defined as having both an A1 component: "the person who experienced, witnessed, or was confronted with an event or events that involved actual or threatened death or serious injury, or a threat to the physical integrity of self or others" and an A2 component: "the person's response involved intense fear, helplessness, or horror."

2.4 Diagnoses of PTSD

According to the current nosology expressed in the DSM-IV, for an individual who has been exposed to traumatic event to be diagnosed as having full PTSD, all the following criteria must be met:

1- Exposure to a sudden and unexpected traumatic event and the response to this trauma must be intense fear, helplessness or horror (Criterion A).

2- The core features of PTSD comprise a stressor criterion that defines the etiologic event and a configuration of symptoms, drawn from 3 groups, that defines the characteristic PTSD syndrome. The 3 symptom groups that constitute PTSD syndrome are as follows:

- Re-experiencing this trauma persistently in different ways by dreams of the event, persistently feeling that the trauma is occurring again, unpleasant emotions, psychological and physiological distress (Criterion B).
- Numbing of affect and avoidance of thoughts, feelings, activities, people, images that symbolize the trauma, talk and places associated with the trauma (Criterion C). Emotional numbing which is considered one of the fundamental symptoms for diagnosis of PTSD. Horowitz (1986) found that 65% of the people who had been diagnosed as having PTSD symptoms had a noticeable lack of interest in social and important activities, withdrawal from social life, feeling that the future is foreshortened and a sense of emotional estrangement from others.
- Excessive arousal symptoms (Criterion D) like the following: trouble falling or staying sleep, irritable or having fits of anger, trouble in concentrating (e.g. drifting in and out of conversations and forgetfulness) and overly alert.

3- The diagnosis requires the persistence of symptoms for at least one month (Criterion E). The symptoms and the problems above should interfere with parts of the social life and cause significant social dysfunction or impairment (Criterion F).

Two types of PTSD severity have been described by the APA in the DSM-IV, Acute Stress Disorder (ASD) and Chronic Disorder (CD). The CD refers to the duration of the continuation of the symptoms. These symptoms must be continuous for 3 months or more. Although, 30% of the people who are exposed to a traumatic event may recover in the ensuing weeks or months and get rid of the symptoms of ASD, 70% of the victims may develop ASD during the traumatic event or weeks after the incident, in which the trauma symptoms might persist for years (Page et al., 2009).

The DSM-IV has also specified the diagnoses of PTSD into Full PTSD and No PTSD. In this thesis however, Full PTSD, Partial PTSD and No PTSD will be used. Although, Partial PTSD is not specified in DSM-IV, the rationale for using such a diagnosis is based on existing literature suggesting that it is not always helpful to view PTSD in terms of having it or not. Literature also suggested that PTSD could be better conceptualised as a spectrum disorder, which may occur along a continuous dimension from normal to extreme or abnormal stress responses (Shalev, 2002). Furthermore, it has also been proposed that some people who are exposed to trauma or dangerous event/s may not fulfill diagnostic criteria for PTSD but still experience impairment in functioning, and thus require more or less the same level of intervention and care as those people who developed full PTSD symptoms (Carlier & Gersons, 1995). For these reasons, PTSD reactions were classified into full, partial and no PTSD.

In this thesis, partial PTSD was defined as people who met at least one out of the three required symptoms groups (Criteria B, C and D) (e.g. they met diagnostic criteria for intrusion symptoms, but not avoidance and/or hyperarousal symptoms) with a duration of at least one month (Criterion E).

2.5 Prevalence of PTSD among the general population

An important survey found that about 60% of men and 51% of women have been exposed during their lifespan to one or more traumatic events (Kessler, Sonnega, Bromet, Hughes, & Nelson, 1995). Approximately 7%-8% of them were likely to develop PTSD symptoms (Bernat, Ronfeldt, Calhoun, & Arias, 1998). However, studies and mental health surveys in different countries reported different prevalence rates of traumatic events with significant links to various psychosocial adversities and exposure to trauma. Studies have also differed in estimation of the rate of emergence of PTSD. Accordingly, a considerable amount of literature has been conducted on PTSD worldwide after exposure to different types of human-generated and natural disasters.

These studies showed that the adults who developed PTSD symptoms in the United States, as an example, are 7.7 million (Folkman et al., 1986). In Korea the estimated lifetime prevalence of PTSD was nearly 3% in a sample of 6,258 Korean households (Jeon, Suh, Lee, Hahm, & Lee, 2007), ranged from 5% to 15% in a sample of 234 Brazilian ambulance workers (Berger, Figueira, Maurat, Bucassio, & Vieira, 2007) and in Rwanda was 24.8% among the 2091 total participants who met symptom criteria for PTSD (Pham, Weinstein, & Longman, 2004). Likewise, the prevalence rate of posttraumatic stress disorder (PTSD) in a sample of 73 male and female refugees and displaced persons living in two refugee camps in Zagreb, Croatia was just over 38% (Marušić, Kozarić-Kovačić, Folnegović-Šmalc, & Ljubin, 1995). Similarly, the prevalence of PTSD symptoms after the Wenchuan Earthquake in Northern of Pakistan was 12.4% (Zhao et al., 2009) among the community residents and 42.6% among reconstruction workers who were involved in the response to the earthquake (Ehring, Razik, & Emmelkamp, 2011).

These controversial and contradictory differences in PTSD prevalence could be due to many vital factors which play an important role in the development or not of PTSD. These factors include, the severity of the traumatic event and how close it is, age and gender, the surrounding environmental circumstances (e.g. parental social support), internal personal factors (e.g. the history of the ex-disease) and methodological problematic regarding the measurements of PTSD. Alongside these, the cultural specificity of PTSD itself may affect prevalence rates.

PTSD is considered one of the common disorders in countries where people have experienced war, conflict and sectarian violence (Morey et al., 2009). Hence, studies were conducted in such countries, such as Ethiopia, Cambodia, Algeria, the Gaza Strip, Northern Ireland and Lebanon to investigate the prevalence of this disorder among civilians who were subjected to frequent episodes of violence, intra- and inter- group conflict and cumulative and prolonged trauma. In Ethiopia, the ratio has found to be 15.8%, in the Gaza Strip 17.8%, and in Cambodia 28.4%. In Algeria however, people reported higher rates of PTSD than other countries, with 37.4% developing symptoms of PTSD as a result of the conflict (Andreoli et al., 2009). In Northern Ireland, Muldoon and Downes (2007) found, through a survey of 3,000 adults, that 42% reported having experienced distressing events, in that 10% met the diagnosis of PTSD symptoms.

Similarly, other countries such as Mexico and Lebanon have experienced prolonged violence and armed conflict. Studies were conducted to examine the lifetime prevalence of violence and how different characteristics of the violent event affected the probability of meeting criteria for lifetime PTSD. In a sample of 2,509 Mexican adults, Baker et al. (2005) found that 11.5% met DSM-IV criteria for PTSD. Farhood et al. (2006) claimed that the prevalence of PTSD was high among Lebanon's civilian population, in which over 29% met PTSD symptoms. A study also showed higher prevalence rates of complex PTSD (85.6%) vs. PTSD (30%) among Kuwaiti women after exposure to different war-traumas (Al-Rasheed, 2004).

PTSD is also common among veterans. Epidemiological studies examined those who were targeted in severe incidents in military action and the victims of violent attacks. It was indicated that the rate among those veterans might vary between 30-40% (Gershuny, Cloitre, & Otto, 2003). Recently, studies (e.g. Thomas et al., 2010) also found that 15% of the veterans and service members returning from Iraq met the screening criteria for PTSD symptoms. Holowka et al. (2012) also reported that 60% of unmedicated male Vietnam veterans had developed PTSD symptoms.

Also, a series of clinical case studies showed evidence that children and young adults suffer PTSD more than adults. Concha (2001) found that 40% of children and adolescents in the United States have been exposed to at least one traumatic event, and 15% of girls and 6% of boys developed PTSD symptoms. Another study found that 3%-6% on average of high school students in the United States, out of the 30%-60% of children who had survived specific disasters and dangerous events, had developed PTSD symptoms (Peak, 2000). This percentage was not different from other studies of children from other areas such as Kashmir and Pakistan. Ayub et al. (2012) proposed that 64.8% of 1,100 children which were affected by a severe earthquake that occurred in 2005 had significant symptoms of PTSD. Girls were more likely to suffer from these symptoms.

Overall, the prevalence of PTSD ranges widely from less than 3% to more than 60%, with higher rates consistently reported among veterans and in areas of recent or on-going conflict.

2.6 What impact has PTSD had? A review of its severity and consequences

There has been increasing attention paid to investigate the long-term impact of traumatic events on the psychosocial functioning of survivors. Further, a surge of interest was devoted to investigating the link between exposure to trauma/s, the prevalence rate of PTSD and the consequences of this disorder. A great quantity of research has been conducted accordingly.

These studies proposed that PTSD is often associated with high morbidity and may be disabling (Okasha & Elkholy, 2012). Literature emphasized that people with greater reactions to trauma had greater psychopathological symptoms and lower psychosocial functioning levels (Jeon et al., 2007). They demonstrated that people who developed PTSD symptoms were vulnerable to major depressive disorder, dysfunctions in work and other psychiatric symptomatology. Similarly, comorbid PTSD among depressed patients was associated with increased poorer prognosis, illness burden and delayed response to depression treatment. A study investigating the prevalence rate of PTSD among 677 depressed military veteran patients found that 36% of them screened positive for PTSD. Patients also reported more severe depression, more frequent outpatient health care visits and were more likely to report suicidal ideation. It also showed that depressed patients with posttraumatic stress disorder are experiencing more severe psychiatric symptomatology and factors that complicate treatment compared to those with depression alone (Campbell et al., 2007).

The association between PTSD and cognitive functioning has been clearly established (Beck, Grant, Clapp, & Palyo, 2009). PTSD symptoms may greatly influence cognitive functioning. Morey et al. (2009) demonstrated that there is a significant association between PTSD and cognitive functional impairment, claiming that patients with PTSD may suffer long-term memory deficits and impaired visual

memory. This result is in line with a considerable amount of literature (e.g. Bressan et al., 2009; Vasterling, Brailey, Constans, & Sutker, 1998; Vasterling et al., 2002).

Exposure to severe dangerous event/s and development of PTSD symptoms is also liable to cause emotional problems (Ehlers, Mayou, & Bryant, 1998). Particular attention therefore was given to investigate the causal association between posttraumatic stress reactions, emotional problems, thoughts and feelings that happen during and after the experience (i.e. dissociation that occurs during the event; e.g. experiencing moments of losing track or blanking out, having an altered sense of time, feeling as if floating above the scene, feeling disconnected from one's body (Marmar et al., 1994). The foregoing studies have consistently revealed that there is a relation between peritraumatic dissociation and PTSD. Succinctly, these studies demonstrated that PTSD could leave substantial emotional problems.

Recent meta-analysis also suggests that PTSD exerts a particularly large negative impact on social functioning, general self-efficacy, and relationships with close others, relative to other anxiety disorders (Beck et al., 2009). A study conducted among 399 survivors of the Hurricane Katrina found an inverse correlation between general self-efficacy and the severity of PTSD symptoms (Hirschel & Schulenberg, 2009).

Impacts of PTSD could extend beyond the personal level to reach the offspring of traumatised individuals (Rutherford, Zwi, Grove, & Butchart, 2007). Studies demonstrated that traumatic events to which parents have been exposed can have a psychological effect on their children (Yehuda et al., 1998). Furthermore, psychoanalytic writers had previously commented on the possibility that parental neuroses could be transmitted to the next generation (Winnicott, 1967). This was first observed among the families of Holocaust survivors (De Graaf, 1998). However, recent research points to this trans-generational or intergenerational effect/s in a variety of contexts, including among children of victims of political violence, children

of war veterans and among children whose parents experienced war and torture (Daud, Skoglund, & Rydelius, 2005).

It can be concluded that although not all individuals who have been traumatized develop PTSD, there can be significant psychopathological symptoms and psychosocial functioning consequences. Untreated PTSD can have devastating, far-reaching consequences for sufferers' cognitive functioning, their families and for society. Individuals who develop PTSD symptoms and suffer from this illness are at risk of having more problems in social functioning, general self-efficacy and their relationships with others. Emotionally, PTSD sufferers may struggle more to achieve psychological stability.

2.7 PTSD research in Iraq

In Iraq, there has been a lack of systematic data about mental health for years, with the exception of some research documenting high rates of psychopathology among children (Al-Jawadi & Abdul-Rhman, 2007; Punamäki et al., 2004; Sadik, Al-Sayyad, & Sadoon, 2008) and asylum seekers (Laban, Gernaat, & Komproe, 2005), compared to the literature in other countries which have experienced less severe traumatic experiences than Iraq. However, in the years 2006-2007, Iraq has undertaken a mental health survey for the first time. It was aimed to provide evidence based on actual data about the prevalence of mental health problems among civilians in Iraq. A random sample of 4,332 Iraqis over the age of 18 was therefore chosen. The survey found that nearly 17% of the sample suffered mental disorders and had high rates of psychopathology in their lifetime ranging from depression to PTSD. The study also found that almost 4% of the respondents suffered lifetime PTSD. Moreover, the overall lifetime exposure to past traumatic events and war related trauma was 56.02% and 48.16% respectively (Alhasnawi et al., 2009). Despite the massive scale of exposure to traumatic events,

which is still continuing, the prevalence of PTSD and other mental disorders in this study was relatively low.

Later on, studies were conducted to investigate and verify this ratio. In a study conducted in Mosul city, north of Iraq, using a cross-sectional multi-cluster sample survey of 424 adults, nearly 26% of the respondents were found to have developed PTSD symptoms, whereas 97.96% reported having experienced at least 4 traumatic events during the past 27 years (AlChalabi & Alhakeem, 2012). So, there is no clear-cut conclusion regarding the prevalence rate of PTSD symptoms and traumatic events among civilians in Iraq. However, the rate of 17%-26% is still high enough to cause concern and to take preventive and therapeutic measures to deal with it.

This section focuses on studies that indexed the incidence of PTSD among civilians in Iraq. Studies were identified through an initial electronic search of relevant database from World of Science, PsyciNFO and MEDLINE, using advanced search and keywords such as 'posttraumatic and Iraq', 'posttraumatic and Iraq/civilians', 'PTSD and Iraq/civilians', 'traumatic and Iraq/civilians' followed by manual searches through abstracts and revealed references. Also, a search was conducted physically by the researcher in many ‘hard’ Iraqi journals since the ‘electronic’ versions are not available online. This search was conducted on studies that have been published in Iraq and are only available in the library catalogues of Baghdad University.

Ten reviews of PTSD were found. However, only two of them were useful since the majority (e.g. Al-Jawadi & Abdul-Rhman, 2007; Sadik et al., 2008) were conducted among children. Likewise, Al-Kubaisy, Hassan and Al-Kubaisy (2009) examined the prevalence rates of traumatic events and PTSD symptoms among university students.

As well as the above, more than twenty studies were aimed at investigating the impacts of dangerous events, their sequelae and the prevalence of PTSD symptoms among diverse of populations. Rather than repeating the data presented

in this review, the present review (see Table 2.1) is limited to PTSD studies in Iraq between the periods 1991-2011.

Table 2.1 summarises the studies conducted among Iraqi people in terms of their design, sample, assessments, incidence of PTSD and symptoms if specified.

PTSD among Children	Study	Purpose of study	Design	Sample	Assessment / questionnaires	Outcomes
	Ahmad et al. (2000)	Investigate the effects of exposure to chemical attack weapons.	Self- report questionnaires.	Children (n=45 (f=21, m=24); Adults (n=45, m=22, f=23).	HUTQ-C and PTSS-C.	High traumatic events level. 87% of children and 60% of their caregivers met DSM-IV PTSD.
	Punamäki et al. (2004)	Examine how the nature and severity of traumatic events are associated with coping.	Interview, self-report questionnaire, and post-testing discussions, lasted about 1½ hours for each group.	153 Kurdish children (boys= 51%, mean age= 12.26, SD= 0.14); (girls= 49%, mean age= 11.95, SD= 0.15).	CCT; The psychological symptoms scale;	The results indicated that coping strategies attenuated impacts of traumatic events and psychological distress symptoms.
	Razoki, Taha, Taib, Sadik, & Al Gasseer (2006)	Three studies to examine the prevalence rates of mental disorders in 3 cities (Baghdad, Mosul and Dohuk).	Cross sectional study, interview	Participants Baghdad=600, Mosul=1090, Dohuk=240 (120 working street, and 120 school children).	I.N.I	In Baghdad: 14%, in Mosul: 30% and in Dohuk: 36% of working street and 16% of school children had PTSD symptoms.

(Continued on next page)

	Ahmad, von Knorring, & Sundelin-Wahlsten (2008)	Assess the traumatic experiences and post-traumatic stress symptoms in Iraq and in exile.	Cross-sectional study, self-report questionnaires and interview in two stages between 1996 and 1999.	n=312 aged 6–18. 201 (101 girls and 100 boys) from Duhok city in Iraq; 111 from Swedish city of Uppsala.	HUTQ-C; Family map (Genogram); PTSS-C.	In Iraq: 32.3% had PTSD. Re-experience=1.5 (S.D.=1.0); avoidance=3.2 (S.D.=1.3); arousal = 1.5 (S.D.=1.3). In exile: 7.2 had PTSD. Re-experience=0.6 (S.D.=0.8); avoidance=1.0 (S.D.=1.3); arousal =0.7 (S.D.=1.3).
PTSD among general population						
	Abdel-Hamid, Salim, AlQaisi, & Ahmad (2004)	Investigate the prevalence of PTSD among adults in Baghdad.	Self-report	n=402 (m=202, f= 200) aged 18-70 years.	Developed a questionnaire based on PTSD criteria in DSM-IV.	35.27% reported PTSD symptoms.
	Al-Kubaisy & Alasdi (2004)	The prevalence of PTSD symptoms and its types.	Cross-sectional, self-report questionnaire and semi- structured Interview.	n=300 females, aged (17-36) Mean=20.64.	Scale was based on DSM-IV was developed and used.	62% experienced at least one traumatic event. 82% had PTSD symptoms. Full PTSD=118, Partial PTSD =37.
	Al-Kubaisy et al. (2009)	Examine the frequencies of traumatic events and PTSD	Cross-sectional, in-person interviews.	n=284 (m=43, f= 241) age 17- 54 years.	A self-reported PTSD.	69% experienced at least one past trauma. Full PTSD= 61%. Intrusion=65%; voidance=41%; Hyperarousal= 69%.

(Continued on next page)

		symptoms among population of Baghdad University.				
	Hassan, (2005)	The relationship between PTSD and self-control.	Self-report questionnaire.	n=200 (m=110m f=90).	Self-report and self-control.	85.1% had PTSD; 58% acute PTSD= 58%, chronic=11.3% and delayed PTSD=6.7%. Significant relationship was found between self-control and PTSD.
	Al-Kubaisy & Al-Kubaisy (2002)	PTSD symptoms among Hiv+Ve patients.	cross-sectional and interview.	n=13 male (15-49 years old).	Al-Kubaisy PTSD Scale.	Full PTSD=63%, partial PTSD= 19%.
PTSD after imprisonment						
	Al-Samurai, (1994)	Identify the prevalence of mental disorders during the first days of return Iraq-Iran war ex- prisoners.	Questionnaires and semi-structured interview within the first week of their returning home.	n=106, Age 27-45-years, Mean=35.67.	PE, diagnostic checklist (ICD-10).	PTSD=46.2%, depression=41.5%.
	Fahmi, (1996)	Diagnose PTSD symptoms among ex-prisoners five	Self-reported questionnaires and in-person	n=720.	Self-report scale.	PTSD=38.7%.

(Continued on next page)

		years after their return.	interviews. T=5 years following the event.			
	Al-Kubaisy, (1998)	PTSD types among ex-prisoners of the Iraqi-Iran war.	Self-report questionnaires and interviews.	n=150 aged between 19-59 years. Gender not specified. Ex-prisoners=82, civilians =68.	Measure was based on the DSM-IV, CAPS.	Acute PTSD=53%, Chronic=47.7%, delayed=2%. Mild PTSD=22.6%, Severe PTSD=43.7%.

HUTQ-C= Harvard-Uppsala Trauma Questionnaire for Children; **PTSS-C**= The Posttraumatic Stress Symptoms for Children; **CCT**= Coping Cartoon Test; **I.N.I**= International Neuropsychiatric Interview; **Hiv+Ve**= Human immunodeficiency virus; **DSM-IV=** Diagnostic and Statistical Manual of Mental Disorders-Fourth Edition; **CAPS** Clinician-Administered PTSD Scale; **PE**= Psychiatric Examination; **ICD-10**= The Tenth International Classification of Diseases.

The incidence of PTSD varies across the population after exposure to a variety of dangerous events. However, the high ratio reported was among the young people. The reported incidence of PTSD among Iraqi children ranged from 14% (Razoki et al., 2006) to 87% (Ahmed et al., 2000). The variety in study designs and use of PTSD questionnaires may explain this discrepancy in PTSD incidence. For example, using a diagnostic interview model, Razokhi et al. (2006) produced the lowest incidence of PTSD. Using a similar method, Ahmad et al.'s cross sectional study (2000) employed a self-report- PTSS-C, and reported the highest incidence of PTSD.

Unlike most previous studies among Iraqis, the prevalence rate of PTSD among the general population was less than 4% in Alhasnawi et al. (2009). However, the ratio that has been found in most other studies varied from 22.6% (Al-Kubaisy, 1998) to 85.1% (Hassan, 2005). What are the reasons for the discrepancy in the incidence of PTSD? Firstly, the ratio of less than 4% seems to be a questionable result especially since it is not clear whether the data collectors were qualified and well trained for this kind of work. Secondly, the security situation during the period of data collection was quite difficult and entering some areas of Baghdad, which were included in this study, was not easily accessible. Thirdly, the Arabic version of Composite International Diagnostic Interview might be unsuitable for Iraqis in terms of wording. And finally, instead of focusing on a specific disorder, the survey tended to measure several mental disorders together. This might have had an effect on the sensitivity of the scale and decreased the specificity.

2.7.1 Post-bombing literature in Iraq

There is a paucity of studies looking at the psychological consequences and mental health following bombing attacks generally and specifically in relation to civilians in Iraq. Only one published study has addressed the psychological effects among the Iraqi children who were exposed to the bombing of the Al-Ameriyah shelter on February 13th, 1991. This was one of the most extreme attacks targeting Iraqi civilians. Following the bombing, Dyregrov, Gjestad, & Raundalen (2002) interviewed a group of 94 Iraqi children who had lost family member-s and/or friend-s after 6 months, 1 year and 2 years. The Impact of Event Scale (IES) was chosen to assess the reaction of the sample. Around 80% of the 94 children were found to have developed PTSD symptoms. The majority of them also experienced indications of depression and remained anxious and afraid of losing other members of their family. The study also showed that there was no significant decline in PTSD symptoms over time, neither after 6 months nor one year. After two years, however, there was a significant decline in the above symptoms and more generally of intrusive and avoidance symptoms (Dyregrov et al., 2002).

2.7.2 Mental health services in Iraq

A considerable number of the foregoing studies, such as Razoki et al. (2006) anticipated that the ratio of PTSD symptoms could increase due to the lack of mental health care in Iraq. Interest in the mental health care of people in Iraq is a relatively recent development. Biomedical care with mental illnesses began about 60 years ago with the formation of separate psychiatric hospitals in Baghdad, and just three decades ago became part of general hospital care across Iraq. Commonly, the mental health services are provided in out-patient healthcare facilities for the general population. The virtually exclusive mode of therapeutic treatment is psychotropic medication (AlObaidi, 2011).

With very limited resources, the child and adolescent mental health services clinic was launched at the Central Child Hospital in Baghdad in 2003. In addition, some governmental and non-governmental agencies were running a few institutes for disabled children and some residential care homes for orphans. However, the effectiveness of the services of the majority of these institutions was undermined due to the lack of resources and trained staff (AlObaidi, 2011).

After 2003, the mental health services deteriorated dramatically and faced a huge challenge, namely, the shortage of human resources. The World Health Organization-Iraq stated that there were only 91 psychiatrists, 16 psychologists, 145 psychiatric nurses, and 25 social workers for more than 24 million people, (WHO-Iraq, 2006), alongside the fact that over 85% of non-governmental organisations have stopped operating in recent years.

Regarding the hospitals, only two mental health hospitals in Baghdad (Al-Rashad and Ibn Rushd) are able to offer help with very few psychiatrists. In Al-Rashad hospital, as an example, there is one psychiatrist for more than 150 people (Lehmann, 2004). The security situation has played a significant role in the reluctance of the majority of psychiatrists and psychologists to work in Iraq and left them with no option but leaving the country seeking safety.

2.8 What impact can the experience of bombing attack leave among civilians?

The research on the effects of experiencing a bomb attack has recently yielded a considerable wealth of literature on the related mental health (North, 2001; North et al., 1999). Studies have been conducted in many areas of incidents such as Northern Ireland, Israel, France, Spain, London, Turkey, the USA and Bali. Part of this research here has been to examine the psychological consequences and risk factors of PTSD symptoms among civilian people following such terrorist bombing

attacks. The nature of the traumatic reactions of people who were targets of these bombings has been reported in several studies. These have focused for example on the March 2004 bombing in Madrid (Iruarrizaga, Miguel-Tobal, Cano-Vindel, & González-Ordi, 2004; Miguel-Tobal et al., 2006), the Oklahoma City bombing 1995 (Peak, 2000; Pfefferbaum et al., 2000), the Omagh bombing in Northern Ireland (Luce, Firth-Cozens, Midgley, & Burges, 2002), the France bombing in 1995-1996 (Verger et al., 2004), the US embassy bombing in Nairobi, the bombing in Bali 2002 (Njenga, Nicholls, Nyamai, Kigamwa, & Davidson, 2004), the bombing attack in Istanbul 2003 (Page et al., 2009) and the London bombings of 7 July 2005 (Handley, Salkovskis, Scragg, & Ehlers, 2009a; Whalley & Brewin, 2007).

These studies have proposed that experiencing a bomb attack is one of the most intensely painful experiences known to humankind. Moreover, survivors are at a high risk of psychological disturbances, troubles, disruptions and stimulations of psychological, physiological and mental health disorders (Luce et al., 2002) and especially high rates of psychiatric illnesses in people who have been seriously physically injured (Charatan, 2002).

More precisely, research among people who were exposed to the Oklahoma City Bombing 1995 has presented evidence to suggest that 22% of survivors suffered depression, 9% agoraphobia, 7% panic disorder, 4% generalized anxiety disorder, 9% alcohol use disorder and 2% had drug use disorder (North et al., 1999). It has also been found there can be evidence of grief and a lost sense of personhood (Allen, 2006) and it can negatively impact on general mood (Somer, Ruvio, Soref, & Sever, 2005). Also, symptoms such as travel phobic fear, anger problems and feeling upset by remembering the bombing emerge as long-term psychological effects of bombing experience. Kutz, Resnik, & Dekel (2008) have also suggested that exposure to bombing attacks tends to produce acute stress symptoms with risk factors for these to develop into PTSD (Njenga et al., 2004), including intrusive and avoidant symptoms (Essar, Palgi, Saar, & Ben-Ezra, 2007) in the months following the

bombing attack experience. The experience of attacks also associated with the co-occurrence of substance-related disorders, and with increased morbidity and mortality (Bleich, Koslowsky, Dolev, & Lerer, 1997).

The focus of research has also increasingly turned to specifying the developmental psychological pathways between exposure to bombing and developing PTSD symptoms (North et al., 2004). There is now much evidence to support the hypothesis that terrorist bombing attacks represent an emerging large scale threat that have the potential to traumatically affect large numbers of persons worldwide, substantially, and confer a convenient opportunity to develop PTSD (Luce et al., 2002). Various investigations have documented that the prevalence rate of PTSD among terrorist bombing attack survivors varies from 12.0% to 38.6%. Research conducted by North et al. (1999) to investigate the ratio of PTSD among survivors who were exposed directly to the aftermath of the 1995 Oklahoma City bombing showed that 34.4% met PTSD symptoms and 45% of the participants (182 survivors) had post disaster psychiatric disorder. Similarly, Njenga et al. (2004) demonstrated that the prevalence of PTSD was 35% among the bombing survivors of the U.S. Embassy in Nairobi 1998.

The impacts of such attacks go beyond people who were directly exposed to the bombing to suggest vicarious traumatisation (North et al. 2002). Several studies indicate that workers who were trying to help victims, such as firefighters who were trying to rescue people and health services staff who engaged in dealing with survivors during and after bombing attacks, subsequently developed post disaster psychiatric disorder, developed PTSD and other psychological stressors. Luce et al. (2002) claimed that the psychological consequences among these people are of comparable severity to that of the actual bombing survivors.

A review of recent literature yielded several studies that have presented evidence that 13% of the firefighters who were engaged in rescuing people during the Oklahoma City bombing in 1995 developed PTSD symptoms and high rates of

alcohol disorders (North & Pfefferbaum, 2002). In the same vein, a study conducted in the aftermath of the Omagh bombing in Northern Ireland showed that health services staff had high levels of symptomatology and intense posttraumatic reactions (Luce et al., 2002). These findings are consistent with those documented in two studies among emergency personnel who took part in rescue efforts after the Hilton Hotel bombing in Sinai, Egypt on October 2004 (Essar et al., 2007) and the March, 2004 bombing in Madrid (González Ordi, Miguel-Tobal, Vindel, & Iruarrizaga, 2004). Table 2.2 summarises studies which have examined associations between PTSD and mental health disorders following bombing attacks among civilians.

Table 2.2 PTSD and mental health disorders following bombing attacks among civilians

Study	Purpose of study	Design	Sample	Assessment	Outcomes
PTSD and mental health disorders after bombing among civilian					
Curran et al. (1990)	Investigate: 1- the prevalence of PTSD; 2- the relationship between physical and psychological injuries after the 1987 Enniskillen bombing- Northern Ireland.	Longitudinal	n=26 victims (aged 14–62 years).	PDS, GHQ.	n=13 had PTSD symptoms. Females developed PTSD more than males. High psychological distress. And finally there is no association between psychological and physical injury.
Somasundaram, (1996)	Assess the psychological consequences of aerial bombing.	Interview using structured questionnaires.	n=43, age 15–66, mean= 31.6 years.	SIQ.	74% had experienced an immediate stress reaction. 44% met PTSD symptoms. Somatic complaints with no organic cause=58%; anxiety disorders=19%; depressive symptoms=14%. Social withdrawal, irritability and hostility, interpersonal relationship problems were also found.
Sprang, (1999)	Explore the nature of response to the Oklahoma City bombing, and differentiate the	Comparative Study.	n=472.	DIS.	The Oklahoma City groups reported higher levels of post-disaster disorders than

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	expression of PTSD symptomatology within 3 study groups.				the comparison sample.
Tucker et al. (1999)	Describe trauma and recovery after Oklahoma City bombing.	Longitudinal.	n=3 adults.	PCL-C, BDI.	Participants experienced anxiety, depression, PTSD symptoms and work impairment.
Duchet et el. (2000)	Investigate the psychological symptomatology of the 1996 bombing in Paris.	Longitudinal and prospective.	n=56.	LES, PDS, GHQ.	Participants developed psychotraumatic symptomatology which is related to the presence of acute stress.
Pfefferbaum et al. (2001)	Describe traumatic grief after the Oklahoma City in1995.	Survey, questionnaires.	n=40 people suffered losses, mean age=21–73.	Self-report instrument.	There is a significant relationship between PTSD symptoms and grief. People with high levels of PTSD have shown stronger difficulty functioning than people with low levels.
Pfefferbaum, (2001)	Investigate the influence of bomb-related television viewing on PTSD symptoms following the 1995 Oklahoma City bombing.	Survey, Questionnaires.	n=2000 middle school students.	IES-R	There is a significant relationship between both emotional and television exposure with PTSD.
Pfefferbaum et	Examine the relationship	Survey.	n=88 students.	DIS.	There is a strong

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al. (2003)	between indirect exposure (broadcast and print media) to the bombing of Oklahoma City 1995 and PTSD reactions.				relationship between print media exposure and enduring PTSD.
Iruarrizaga et al. (2004)	Investigate the psychological impact of the March, 2004 bombing in Madrid.	Cross-sectional, Structured phone interview. T= 1 and 3 months post bombing.	n=17 directly exposed to the bombing (59.5% female) mean age=39.8. Relative killed=66.1%, friend killed=87.9%.	PCL-C, BDI.	45.53% suffered panic attack; 31.3% presented major depression; 35.9% PTSD.
Verger et al. (2004)	Prevalence rate of PTSD after the France bombing in 1995-1996.	Follow up, cross-sectional, telephone and postal questionnaires.	n=228, f=105, m=91, age=18 years or older	22-item standardized instrument based on DSM-IV criteria, Burn-Specific Health Scale.	31.1% met PTSD symptoms. Intrusion= 75.5%, avoidance=32.7%, arousal=68.4%.
Somer et al. (2005)	Examine the psychological responses and ways of coping among Israeli people after campaign of car bombings.	A computer-generated random telephone list, structured interview, questionnaires.	n=327 adults, average age (42.5 years, SD=15.6), f=60%, m=40%.	Demographic information, IET, CTS, H-MHI, IES-R-B.	14% met IES-R-B and high level of negative mood. Avoidance: (M=1.30, SD=1.25); Intrusion: (M=2.30, SD=1.50); Hyperarousal: (M=1.13, SD=1.28). Acceptance and uncontrollability were the most coping strategy employed.

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Miguel-Tobal et al. (2006)	The prevalence rate of PTSD and depression for the Madridian people after the bombing of March 11th.	Telephone interviews, cross-sectional random digit dial survey approximately 1 to 3 months after attacks.	n=1,589, M=47.1%, f=52.1%, age range 18 to 92 years, Mean age 45.5years (SE=0.64).	SCID, NWS, MDD.	2.3%, 8% reported PTSD and major depression respectively.
Konvisser, (2007)	How bombing survivors make sense of their experience and give meaning to it.	Mixed method collecting data.	n=24 Israeli civilian, age 22-63.	PTGI, PSS.	Participants experienced posttraumatic growth and suffered highly challenging life circumstances. However, they confronted their trauma-feelings and images by going forward in their lives and having hope and clear vision toward future.
Gabriel et al. (2007)	Assess the prevalence and correlates of PTSD, major depression and anxiety disorders among survivors of the Madrid bombing, 2004.	In person interviews between 5 and 12 weeks after the bombing.	n=27 injured in the attack, 485 general people and 153 policemen involved in rescue. Mean age of first group=36.9, m=54%. Mean age of second group=39.1. Mean age of third group=36.4, m=93%.	DTS.	First group: PTSD=44.1%, intrusive=96.1%. Second group: PTSD=12.3%, intrusive=87.2%. Only 1.3% had PTSD among third group, intrusive=60.1%.
Tucker et al. (2007)	Assess autonomic reactivity to trauma reminders and	Comparison study, data from North et	n=60 survivors of Oklahoma City bombing.	DIS, IES-R, BDI.	39.7% PTSD, 6.7% Depression.

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	psychiatric symptoms.	al., 6 months and 18 months after the bombing.	Mean age=47.7 (SD=9.1), m=31, f=29.		
Aker et al. (2008)	Assess the prevalence of probable PTSD among different age groups after November 2003 bombing attacks in Istanbul.	Cross-sectional.	Different groups (students, teachers and staff). A hundred and seven injured. Age=(14 - 20 students; 23-74 teachers and employees).	K-BTSQ.	Probable PTSD=32 %. Students: Re-experience=22.7 %, avoidance=17.4%, hyperarousal=21.9%. Adults: re-experience=37%, avoidance=39.1%, hyperarousal=32.6%.
Page et al. (2009)	Investigate posttraumatic stress and depression reactions among people who were exposed to bombing attack in Istanbul 2003.	Self-report questionnaires after an average of 6 months after the bombing.	n=149 survivors, m=62 (41.6%), f=87 (58.4%). Age ranged from 18- 54 years, mean age=30.84 (SD=7.17).	PSS-SR, BDI.	35.6% reported PTSD symptoms, 23.5% reported depression 6 months after the bombing.
Handley et al. (2009a)	Investigate the psychological reactions of the 2005 London bombings.	In-person diagnostic interview, questionnaire screening for PTSD and other symptoms were sent.	n=596, Mean age= 36.50 (SD=11.80).	TSQ.	PTSD=72%, 45% had endorsed the travel phobia.
Ankri & Shalev (2010)	Evaluate PTSD symptoms among direct survivors of suicide bus-bombing incidents	Self-report questionnaire, structured telephone	n =20 Ultra-Orthodox and 33 non-Ultra-Orthodox.	PSS-I, CAPS, PTCI, BATC.	PTSD symptoms for Ultra-Orthodox survivors= 84%, non-Ultra-Orthodox = 75%.

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	in Jerusalem.	interviews, structured clinical assessments.			
PTSD and coping strategies following bombing					
Benight et al. (2000)	Investigate the importance of subjective appraisals of coping self-efficacy in predicting psychological distress following the Oklahoma City bombing.	Cross-sectional; psychosocial questionnaire and a semi-structured interview.	n=27 victims were recruited 2 months after the bombing.	CSE; ISEL; SCL-90R; PDS.	Coping self-efficacy perceptions taken were significantly related to alleviated distress levels.
Páez et al. (2007)	How social sharing helped people to cope with the train bombings in Madrid in 2004.	In-person interview/ scales and eight universities at 1, 3 and 8 weeks after the bombing.	n=661, m=28%, f=72, mean age=27.43 years.	DES-9 items, WCS, SS-A, PTGI, ECS.	Participating in social activities, demonstrations, social sharing and protest rituals helped overcome the effects of collective trauma and led to an improvement in the emotional climate.
Tucker et al. (2002)	Assess the impact of several coping techniques in psychological distress following Oklahoma City's 1995 terrorist bombing.	Longitudinal study.	n=51, m=69%, age= 25-56.	100-item survey.	Respondents used a variety of strategies, such as increased alcohol use, but none of them was associated with differences in symptom levels.
Pfefferbaum & Doughty (2001)	Examine alcohol use among victims following Oklahoma	Cross-sectional.	n=43.	Not specified.	Results revealed significant relationship between

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	City bombing.				increased alcohol use and posttraumatic stress symptomatology.
Trajectory of PTSD after bombing with or without treatment					
Sprang, (2001)	Explore the psychological impact of the Oklahoma City bombing.	Longitudinal at 3-months intervals for 18 months following an initial 6-months survey and in-person interview.	n=44 adults, mean age=34.8.	Not specified.	PTSD symptoms (avoidance, re-experience and avoidance) declined over time with or without treatment between 6 and 9 months.
North, (2001)	Determine the longitudinal course of PTSD and psychiatric disorders.	Longitudinal (182 T1 6 months post-bombing, 141 assessed at T2 approximately 1 yr later).	n=182 Oklahoma City bombing survivors.	DIS.	One-third of the participants had PTSD. Participants showed more recovery from depression than from PTSD.
Dyregrov et al. (2002)	Investigate the psychological effects of the Gulf War on children over time in Iraq after the bombing of the Ameriyah shelter on February 13th, 1991.	Longitudinal study at 6 months, 1 year and 2 years. Semi-structured interview.	n=94 Iraqi children, mean age=11.5 years. Girls=47%, Boys=53%.	CBI, PTSRC, IES	PTSD= 80%. TI: Intrusion= 21.45 (SD=7.67), Avoidance=11.60 (SD=5.35). One year later: Intrusion=21.85 (SD= 8.26), Avoidance= 13.32 (SD=5.87). Two years later: Intrusion=17.24 (SD= 9.28),

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					Avoidance=11.76 (SD=5.44).
Koplewicz et al. (2002)	Assess PTSD symptoms of children and their parents, 3 and 9 months after the bombing of the WTC.	Follow up.	10 boys, 12 girls. 5 boys, 22 girls control group.	PTS-RI, Revised Fear Survey Schedule, BSI.	PTSD symptoms for the parents and children increased over time. Three months: None=9, Mild=23, Moderate=42, Severe =23, very severe =4, 9 months: None=14, Mild=32, Moderate= 41, Severe14, Very severe=0.
Gillespie et al. (2002)	Assess symptomatic change for people with PTSD resulting from a car bomb which exploded in Northern Ireland in 1998.	Treatment Outcome/Clinical Trial. Training in cognitive behavioural therapy for PTSD. Treatment sessions.	n=91 patients with PTSD aged 17-73 years. 64 female, 27 male.	PDS, BDI, GHQ.	Significant improvements in PTSD patients. However, the improvement was less in patients who were physically injured than patients who were not.
North et al. (2004)	Assess PTSD over time after the Oklahoma City bombing 6 and 17 months post-disaster.	A follow up of their studies of 2001 and 2002.	n=137 survivors.	DIS.	Combined index and follow-up=41% incidence of PTSD, detected at index= 32%, follow-up=31%. All PTSD was chronic (89% unremitted at 17 months).
Pfefferbaum et al. (2006)	Explore psychological	Longitudinal study	Not specified.	PDS, General	The psychological distress

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	resilience and recovery following the 1995 Oklahoma City bombing.	for over 3 years 1995, 1996 and 1998.		Stress Scale.	decreased over time.
Kutz et al. (2008)	Investigate trajectory of AS syndromes among people suffering from intrusion distress following bombing attacks by using single-session modified EMDR.	Follow-up at 4-week and 6-month.	n=86.	SUDS.	Immediate fading of intrusive symptoms and general alleviation of distress =50%, partial alleviation=27%, no improvement=23%.
Lesmana et al. (2009)	Assess PTSD symptoms over time among children who experienced bombing in Bali 2002.	Longitudinal (2 years), quasi-experimental (pre-post test), single-blind, randomized control design.	n=226; f=52.7, age 6-12 years.	Standardized self-report assessment.	The improvement rate to reduce PTSD symptoms by using SHAT= 77.1%.
North et al. (2011)	Examine the long-term course of psychiatric disorders symptoms of the Oklahoma City bombing.	Longitudinal study at 6 months and again nearly 7 years post-bombing. A follow up of their studies of 1999.	n=182 approximately 6 months post-bombing, n=113 at the follow up.	DIS	41% (46/113) developed PTSD after 6 months. At 7 years, 26% (29/113) had active bombing-related PTSD. 37% had a full-remission rate for PTSD.

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					Major depression=38% (41/108) after the bombing. 73% had fully remitted by follow-up.

PDS= Post-trauma Diagnosis Scale; **GHQ**= General Health Questionnaire**; SIQ**= Stress Impact Questionnaire; **DIS**= Diagnostic Interview Schedule**; PCL-C**= PTSD Checklist – Civilian version; **BDI**= Beck Depression Inventory; **LES**= Life Events Scale; **IES-R**= The Impact of Event Scale, Revised Version; **WTC**= World Trade Center; **PTS-RI**= Posttraumatic Stress Reaction Index; **BSI**= The Brief Symptom Inventory; **IET**= Index of Exposure to Terror; **CTS**= Coping with Terror Scale; **H-MHI**= The Hebrew Mental Health Inventory; **IES-R-B**= The Impact of Event Scale, Revised Version, Brief; **SCID** =Structured Clinical Interview for DSM-IV; **NWS=** National Women's Study; **MDD**= Major Depressive Disorder; **PTGI**= Posttraumatic Growth Inventory; **PSS**= Posttraumatic Stress Disorder Symptom Scale; **DTS**= Davidson Trauma Scale; **K-BTSQ**= Kocaeli-Brief Traumatic Stress Questionnaire; **PSS-SR**= The PTSD Symptom Scale: Self-Report Version; **TSQ**= Trauma Screening Questionnaire; **PSS-I**= The Posttraumatic Symptoms Scale – Interviewer; **CAPS**= The Clinician-Administered PTSD Scale; **PTCI**= The Posttraumatic Cognition Inventory; **BATC**= The Brief Assessment of Traumatic Cognitions; **CSE**= Coping self-efficacy; **ISEL**= The Interpersonal Support Evaluation List; **SCL-90R**= Symptom Checklist-90, revised; **DES**= Differential Emotions Scale; **WCS**= Way of Coping Scale; **SS-A**= Subjective Social Support Scale; **ECS**= Emotional Climate Scale; **SHAT**= Spiritual-Hypnosis Assisted Therapy; **CBI**= Child Behaviour Inventory; **PTSRC**= Posttraumatic Stress Reactions Checklist; **IES**= The Impact of Event Scale; **AS**= Acute Stress; **SUDS**= subjective units of discomfort scores.

The incidence of bombing-related PTSD was found to be varied: PTSD incidence ranged from 2.3% (Miguel-Tobal et al., 2006) to 84% (Ankri, Bachar, & Shalev, 2010). This massive variation could be related to a variety of factors:

A. Firstly, differences in study designs and use of PTSD measures, for example, using self-report questionnaires-SIQ with 43 survivors, Somasundaram (1996) reported that 44% had post-bombing PTSD symptoms. North et al. (1999), however, using DIS, found 34% of the Oklahoma City bombing survivors had post-bombing PTSD symptoms.
B. Secondly, the severity and direct/indirect exposure to the bombing could account for the differences. For example, in terms of indirect exposure, the prevalence of PTSD was substantially low (Miguel-Tobal et al., 2006). Whereas, in a study where 66.1% of the sample had at least one relative killed and 87.9% at least one friend killed during the bombing, the prevalence rate of PTSD was substantially high (Iruarrizaga et al., 2004) (see Table 2.2). Studies among victims who were exposed directly to the bombing reported higher incidence of intrusion and hyperarousal symptoms than people who were near to the bombing (Verger et al., 2004). However, in Aker et al.'s cross-sectional study (2008), they employed a self-report questionnaire-K-BTSQ to assess the prevalence of probable PTSD in different residential areas, and reported more avoidance than people who were directly exposed to the bombing. It is possible that exposure to bombing is perceived as being more life-threatening and therefore may trigger more intrusive thoughts. On the other hand, people with no direct exposure might avoid such an experience, thus their avoidance symptoms may become more prevalent.

Studies also showed that effectiveness of coping strategies to alleviate the psychological distress was varied. In the study of Lesmana et al. (2009) using professional coping strategies was found to reduce PTSD symptoms, unlike Pfefferbaum & Doughty's cross-sectional study (2001) that revealed a significant

relationship between increased alcohol use and PTSD. The reasons could be that some personal strategies could lead to maladaptive behaviours, which might maintain over time.

2.9 Coping strategies- how are people coping with bombing attacks?

Exposure to bombing attack has clearly been found to cause high levels of stress which has been associated with the development of a wide range of psychological problems (Shahar et al., 2009). However, not all people exposed to bombing exhibit significant or long-term health problems. One suggestion is that variation in resilience- the likelihood of problems developing is related to psycho-social coping factors. Folkman et al. (1986) proposed that people employ various defenses and coping strategies against stressors to protect their psychological and emotional well-being. Broadly two processes have been identified, cognitive appraisal and coping.

Cognitive appraisal has two components: primary and secondary appraisal. The person, in the primary appraisal, evaluates whether the experienced event is stressful or not. If the event has been evaluated as stressful, the person assesses the coping options and resources to respond to that event. This is called the secondary appraisal process (Folkman et al., 1986). Nevertheless, the chosen strategy depends on the extent to which the stressful event is under control. Evaluating whether the event is under control, though might be affected by the skills and capabilities that the individual already possesses.

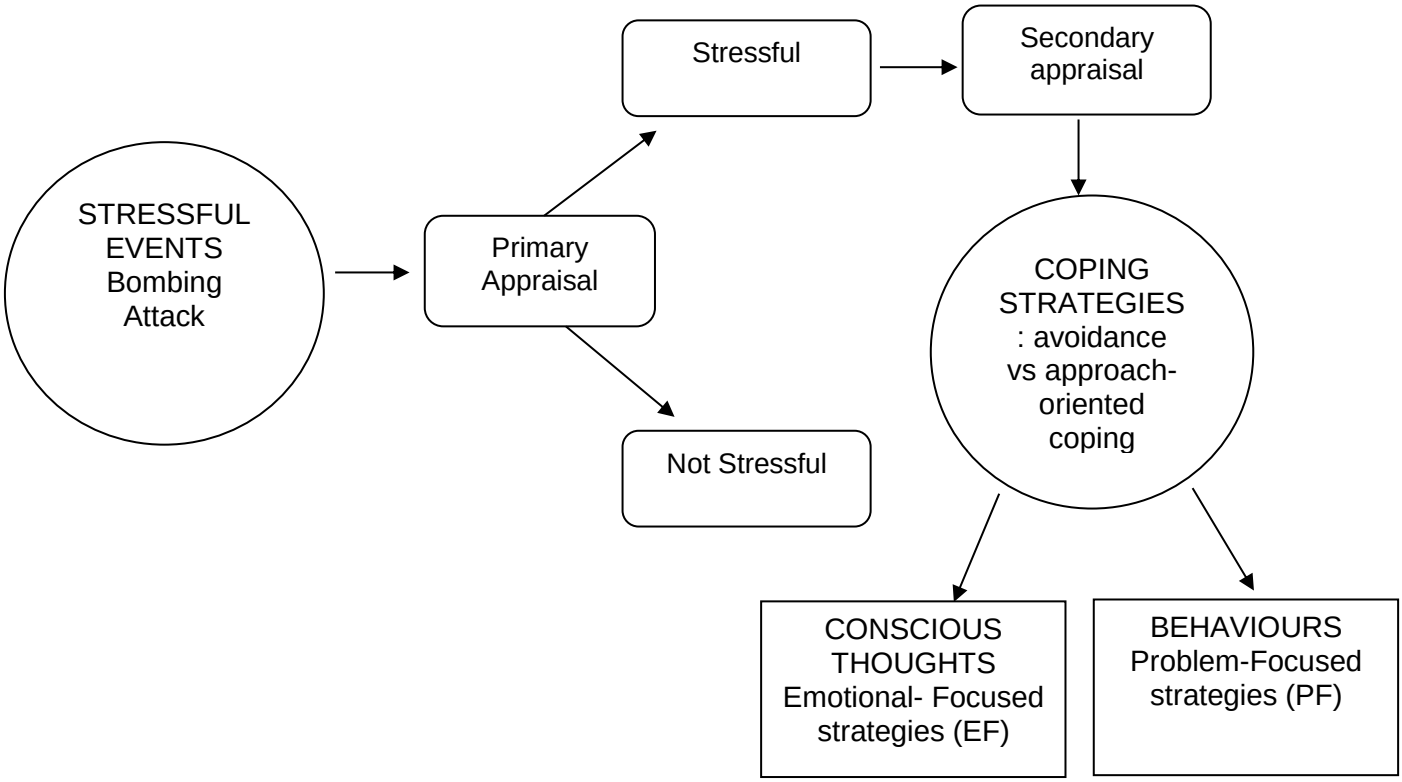
Coping is the second process and also contains two components, conscious thoughts and behaviours, to manage internal and external stressors. These are used to organize coping responses to demonstrate variability. Trauma literature tends to support the idea that the person learns coping strategies as a response to many stressors during the lifespan. Then after exposure to a tremendously painful situation,

the individual might fall back on one or more of those strategies. However, some might experience increasing vulnerability to experiencing distress following stressors since they did not learn effective coping strategies (Krause, Kaltman, Goodman, & Dutton, 2008).

Coping strategies have been differently defined and categorised. The two aspects- conscious thoughts and behaviours- have been regarded as interactive processes. Two of the core theorists in the study of coping, Lazarus & Folkman (1984) defined coping as ‘‘the constantly changing cognitive and behavioural efforts to manage the specific external or internal demands that are appraised as taxing or exceeding the resources of the person’’ (p. 141). Coping strategies refer to the behavioural and cognitive attempts that people use to master, tolerate, reduce or minimise the impacts of unpleasant and stressful events (Donnellan, Hevey, Hickey, & O'Neill, 2006).

Two major categories of coping strategies are classified by Lazarus & Folkman (1984) and widely recognized: problem-focused strategies (PF) (comprises efforts to actively cope with the stressful situation and alleviate stressful circumstances) and emotional-focused strategies (EF) (includes efforts to regulate the emotional consequences of stressful situations) (see Figure 2.1).

Figure 2.1 Coping strategies process



Some authors e.g. Holahan & Moos (1991) have argued for another way of seeing both conscious thought and behavioural oriented coping approaches of avoidance-oriented coping (involving behaviours to avoid a stressful situation by seeking out other people or by engaging in a substitute task). The opposite end of the spectrum to avoidance-oriented coping is referred to as approach-oriented coping (involving a direct response towards the painful situation). Avoidance-oriented coping includes resigned acceptance, cognitive avoidance, seeking alternative rewards and emotional discharge, whereas the approach-oriented coping includes positive reappraisal, logical analysis, taking problem-solving actions and seeking guidance and support from others.

Research findings suggest that the same strategy of coping can have different effects in different situations. Interestingly, some coping strategies under some stressful situations seem to be more efficacious and efficient to manage stressful situations and unpleasant emotions (Carver, Scheier, & Weintrau, 1989).

Riolli & Savicki (2010) indicate that problem-focused coping is more functional than emotion-focused coping to reduce psychological distress. It is therefore valuable for more specific clarifications of coping processes in distinct stressful contexts. For that, an attempt has been made to clarify issues regarding effectiveness of coping strategies to moderate the effects of the potential experience of PTSD reaction.

The foregoing examples show that there are different ways to categorise coping strategies. It is more valuable, however, to clarify how they link to potential traumatic events and PTSD reactions. Data from a growing number of studies proposes that coping strategies are significantly correlated with stressors, well-being and PTSD symptoms (Chung, Berger, & Rudd, 2008; Tiet et al., 2006).

The association between avoidant coping strategies and mental health disorders after exposure to dangerous events has been studied by e.g. Krause et al. (2008); Littleton, Horsley, John, & Nelson (2007) and Yoshizumi & Murase (2007). Literature has presented evidence to suggest that there is a significant correlation between avoidant coping and increase of PTSD symptoms and mental health functioning (Littleton et al., 2007), personality disorders (Vollrath, Alnaes, & Torgersen, 1998) and psychopathology (McFarlane, 1992).

However, there is now much evidence to support the claim that avoidant strategies are able to reduce and moderate the effects of the highly dangerous circumstances, stressors and PTSD symptoms (Krause et al., 2008; Tiet et al., 2006). Studies (e.g. Muldoon & Downes 2007; North et al., 2004) point out that victims of bombing attacks employ avoidant strategies to minimize reminders of the original stress reactions. This strategy was efficacious to protect survivors from the incident's continuous reminders, psychological distress, developing PTSD and other emotional disorders. Evidence was also reported by Yoshizumi and Murase (2007) that avoidance could be a defense mechanism against psychological stressors and the high risk of psychiatric disorders.

Despite these controversial points, it seems to be that avoidance strategies can reduce stressors for a short period. But in effect it might lead to maladaptation if an individual persists in relying on it. In other words, coping effort that aims to avoid the painful consequences of dangerous events can make the situation worse (Littleton et al., 2007).

Similarly, the mediating role of perceived social support between dangerous events and mental health was also recognised. Studies have demonstrated that social support is a powerful buffer of the effects of stress (Cohen, 2004). Henrich and Shahar (2008) found that social support played an important role to elevate the effects of depression among Israeli adolescents after exposure to missile attacks. Strous et al. (2007) have also emphasized that social support and contact, for example sharing in social activities, helped to enhance the reconstruction of a positive emotional climate among survivors of traumatic experiences by providing a solution to the problem, reducing the perceived importance of the problem, or/and providing a distraction from the problem. Moreover, high levels of perceived social support have played a meaningful role in preventing the development of severe PTSD and other mental disorders (Shahar et al., 2009).

The physical and/or psychological presence of family, friends and loved ones following trauma is an important factor predicting adaptation to stressors and enhancing the reconstruction of a positive emotional climate (Norris & Kaniasty, 1996). Studies suggest that one of the most robust predictors of recovery from trauma, and even from daily stressors, is the perception of available support from others. More precisely, research of social support and trauma suggests that it is a lack of support that is uniquely predictive of outcome. Evidence indicates that those who do not anticipate that family, friends and loved ones would be available, if needed, cope with trauma far less well than those with high perceived social support (Cohen, 2004).

Further, the lack of post-bombing social support was found to contribute to mental health complaints after involvement in bombing (Páez et al., 2007; Shahar et al., 2009). Data from the Oklahoma City bombing and the 9/11 attacks indicate that social support is important for recovery from such large-scale attacks. Tucker et al. (2000) assessed 85 adults who were exposed directly or indirectly to the Oklahoma City bombing six months following the event. The adults who had strong social networks had a better prognosis than those who had not. In a sample of injured survivors, North et al. (1999) examined the psychiatric impact of the bombing. The study found that turning to others seeking for support was a nearly universal response. The study also indicated that people with PTSD symptoms reported a significant worsening in the quality of relationships with others compared to those without PTSD symptoms.

In the same vein, Schuster et al. (2001) found that 98% of the people exposed to the September 11 attack coped in part by talking with others. The study also accentuated the importance of the social network in recovery from post-bombing distress. It claimed that 60% of the participants employed coping and recovery strategies such as engaging in public and group activities. Likewise, Galea et al. (2002) found that low levels of perceived social support among those living in Manhattan, in the six months prior to the attack, were predictive of depression within one to two months following the attack.

Taken together, although social support is important to resiliency following trauma, the research on social support and trauma suggests that trauma-related distress can have deleterious effects on relationships, thus creating a vicious cycle of distress and loss of support. In most cases, the relationship between social support and mental health is reciprocal. In other words, not only are individuals who have limited social support networks more vulnerable to PTSD, the distress associated with PTSD can also have taxing effects on existing social relationships (Stovall-McClough & Cloitre, 2006).

Amongst the strategies that are documented as related to coping is use of religious frameworks (Carpenter, Laney, & Mezulis, 2012). Studies have suggested that religious strategies can offer some assistance in coping with depression and anxiety resulting from bombing. North et al. (2004) found that the individual's religious beliefs had an effective impact to cope with the bombing attack experience and reduce PTSD symptoms. Different types of religious rituals also helped attenuate the effects of negative reaction and displayed more positive emotions among people exposed to the July 2005 London bombings (Bux & Coyne, 2009). It has also been found that up to 75% of a national sample turned to religion strategies, in the aftermath of the 9/11 bombing, to cope with the bombing and enhance feelings of comfort, control and connectedness (Meisenhelder, 2002; Schuster et al., 2001). Sixty-two percent of a sample of undergraduate and graduate students reported praying to cope with the stress that followed the attacks (Stein et al., 2004).

2.10 Posttraumatic stress and attachment styles

It is suggested that people develop, from their childhood experiences, a set of strategies for managing danger, distress and fear (Muller, Sicoli, & Lemieux, 2000). Attachment seeking consists of turning to parents for comfort and, depending on how this is habitually provided, or not, people are seen to develop a set of expectations. These have been called attachment strategies.

Attachment styles have been distinguished by theorists as secure and insecure, in which the insecure attachment contains preoccupied, fearful and dismissive types (Dieperink, Leskela, Thuras, & Engdahl, 2001). These styles are seen to be held as internal representations of the validity of others to provide support along with a set of strategies for accessing the support available. It is suggested that the internal working model contains two key components. The first is an internal model of the self and the second is an internal model of others. Each internal model

can be divided into positive or negative to produce these four attachment patterns (Renaud, 2008).

So, according to this model, a person's image toward the self can be divided into positive or negative. The positive side represents the self as worthy of love and support. On the other hand, the negative part represents the self which does not deserve love and support. The person's image of the other also can be divided into two parts as positive and negative. The positive side represents others as trustworthy and available, whereas the negative side represents others as unreliable and rejecting. The four attachment styles that are elicited from the aggregation of two opposite dimensions in this model can be seen in Fig 2.2. Each cell represents a theoretical ideal, or prototype, that different people might approximate to different degrees.

Figure 2.2 Model of attachment styles

		MODEL OF SELF	
		Positive (Low)	Negative (High)
MODEL OF OTHER	Positive (Low)	**CELL i** **SECURE** Comfortable with intimacy and autonomy	**CELL ii** **PREOCCUPIED** Preoccupied with relationships
	Negative (High)	**CELL iv** **DISMISSING** Counter-dependent	**CELL iii** **FEARFUL** Fearful of intimacy, socially avoidant

Since the individual's expectations are that other people are generally accepting and responsive, cell i refers to a sense of self-worth and being able to love others and be loved. Theoretically, this cell represents what has been called by researchers securely attached. Thus, this cell has been named secure attachment.

Cell ii, however, refers to a sense of unworthiness and an inability to love others and be loved, but it is combined with a positive evaluation of others. So, individuals in this category seek to be accepted by obtaining the acceptance of valued others. Since the individual is preoccupied with attachment prototype, this cell represents the preoccupied style.

Cell iii is named fearful avoidant. It incorporates a sense of self-unworthiness with an anticipation that others will be negatively disposed (untrustworthy and rejecting). Individuals who are under this category tend to un-involvement and avoid close relationships with others to protect themselves against anticipated rejection.

Like the fearful pattern, individuals in cell iv tend to protect themselves by un-involvement and avoiding close relationships with others. Furthermore, they are attempting to maintain a sense of self-independence and self-invulnerability. However, they have incorporated a sense of ability to love others and be loved with a negative disposition toward other people. Theoretically, this category was named as dismissive avoidant (Bartholomew & Horowitz, 1991).

It has been suggested that dangerous events are processed and interpreted within our attachment styles and these can influence the development of symptoms, including those of PTSD (Brewin, Andrews, & Valentine, 2000). Studies e.g. Muller et al. (2000) has been conducted to understand the short and long term effects of dangerous events on attachment styles, especially with regard to experiences such as combat and rape. Recently, researchers examining attachment styles have begun to focus on the impact of attachment patterns on the development of posttraumatic stress and psychopathology (Fraley & Shaver, 2000).

Studies have found a significant link between attachment styles and posttraumatic stress (Alexander et al., 1998). Bowlby (1982) proposed that insecure attachment results from interactions that cause individuals to doubt the trustworthiness, responsivity, and accessability of other people and to question the integrity of the self. Likewise, PTSD comprises feelings of distrust toward others, and reflects a state of anxious apprehension that impedes the person's ability to have satisfying interpersonal relationships.

Studies also proposed that each of the attachment styles can play a vital role in developing symptomatology (Dieperink et al., 2001). So, progress has been made towards understanding the influence of each pattern on the development or otherwise of PTSD and other emotional symptoms. Mikulincer and Florian (1998) suggest that individuals who possess insecure attachment styles are more likely to develop PTSD symptoms than individuals with secure attachments. In the same vein, Muller et al. (2000) demonstrated that there is a significant relationship between insecure attachment and PTSD and this association derives from the notion that both conditions embody a lack of felt security in interpersonal relations. Empirical studies such as O'Connor and Elklit (2008) also claimed that stressful attachment-related events such as the unresolved loss of a loved one can lead to a number of PTSD symptoms. Dieperink et al. (2001) have also found a significant association between insecure attachment and developing PTSD symptoms and a number of psychiatric disorders such as depression and chronic pain among adults who were abused as children. The results of Muller's studies (2000), that used Griffin and Bartholomew's (1994) two-dimensional model of attachment classification, showed that fearful and dismissive attachment styles were associated with increasing level of posttraumatic symptoms (O'Connor & Elklit, 2008). This may be because both these strategies involve people being reluctant and anxious to seek support from others which can help to alleviate the sense of isolation and of helplessness.

On the other hand, attachments securely have an ameliorative effect on PTSD symptoms severity (McFarlane, 1988). Studies (e.g. Dieperink et al., 2001; Kanninen, Punamaki, & Qouta, 2003) reported that there is a significant association between secure attachment and a decrease in PTSD symptoms among males who had experienced stress and females who attended clinic early pregnancy termination. The results of Muller's studies (2000) also reported that secure attachment was associated with lower reported PTSD symptom severity and less dysphoria (Dieperink et al. 2001). Secure attachment consists of a positive sense of self and also accompanying positive views that others are willing to provide support and comfort. They are therefore more likely to seek and to be able benefit from emotional support and comfort offered by relatives, friends and others.

2.11 SUMMARY OF THE CHAPTER

This chapter summarises the history of psychological trauma and the development of the PTSD construct. Literature has demonstrated that the concept of PTSD did not arise until the 1980s. The definition of PTSD varies, but is most commonly identified as a disorder that occurs after exposure to a traumatic event/s. Studies have differed in estimating the rates of emergence of PTSD, but often 1 in 5 people who have been exposed to highly dangerous (potentially traumatic events) meet PTSD symptom criteria.

There has been a surge of interest in the consequences of this disorder, generating many studies. There is some consensus in the literature that stressors and dangerous events have a negative impact on mental health, personality, quality of close relationships with others, functions in work and general self-efficacy.

A considerable body of research examining the psychological consequences and risk factors of PTSD symptoms among civilians following terrorist bombing attacks has recently emerged, particularly in the countries where people experienced war, conflict and sectarian violence. In Iraq, however, there has been a paucity of systematic studies looking at the psychological consequences and mental health following bombing attacks generally, and specifically in relation to civilians, compared to the literature in other countries which have experienced less severe trauma.

Although being in a bombing attack experience is likely to bring about physical and mental health problems, not all people exposed to bombing exhibit health problems. This suggests that people employ various defensive and coping strategies, such as social and religious support, to cope with highly dangerous events and moderate stressors. Furthermore, dangerous events are processed and interpreted within our attachment styles and these can influence the development of symptoms, including those of PTSD.

In the following chapter, a qualitative study exploring the subjective experience relating to bombing of participants who were involved in a terrorist bombing attack in Iraq will be discussed.

CHAPTER 3

STUDY 1: AN EXPLORATION OF PTSD AND COPING STRATEGIES

3.1 INTRODUCTION

The aim of the present study was to explore how people who have experienced a potentially trauma inducing event of being a direct victim of bomb attack make sense of their experience and identify their ways of coping. A direct victim of a bombing attack here means that the person is affected, usually by being physically present at the attack site or by having a close family member killed or injured during the bombing. The study involved an in-depth analysis of people's experience of the event and the meanings they subsequently gave to it.

Prior to this thesis, no other qualitative studies exploring the experience and potentially posttraumatic stress responses of bombings in Iraq have been reported in literature. Understanding more about how people cope with bombing attacks is therefore important for those working in this field, including those attempting to develop effective services for victims. The psychological effects of such attacks are likely to be significant, and the way people cope with them is considered a valuable area of research. So, the results of this study could extend our knowledge of PTSD and coping strategies, especially in the context of danger. In particular, most of the work to date had been conducted on recovery from trauma where a relatively safe context was subsequently available (Handley et al., 2009b). In other words, recovery from trauma is facilitated by a sense of now being in a safe context, but this is not the case in Iraq, which continues to be unsafe.

3.1.1 Research question

To examine the lived experience of people who have been in a bomb attack. To examine the ways of coping with such dangerous event. In order to do this, the subjective experiences, beliefs and perceptions of twenty individuals who had been exposed to a bomb attack will be explored. In particular, their ideas, feelings and memories about the impact of this experience on them will be examined.

3.2 METHOD

This study involved a qualitative method approach and explored a relatively under-researched area; therefore it was progressive in its design. The study aimed to generate rich data regarding the nature of people's experience and further to generate specific variables for detailed quantitative exploration in the next three studies. This is consistent with principles of innovative research using a mixed methodology design to explore under-researched topics.

3.2.1 Sample recruitment

A total of twenty people (male=10, female=10) exposed to their first terrorist and military bombing attack were recruited for this study. Participants were chosen on the basis of it being their first attack.

3.2.2 Inclusion criteria

People were included in this study based on the following criteria:

1. They were exposed to a bomb attack and the attack was the first incident they experienced.
2. They were aged 18 years or older.
3. The bombing incident took place at least 1 month prior to the interview.
4. They were all civilian.

3.2.3 Exclusion criteria

People were not eligible to participate in the study if:

1. They were less than 18 years old.
2. Had been exposed to bomb attacks more than once.
3. The incident was less than one month prior to the interview.
4. They were soldiers, policemen/women or any member in the Ministry of Defence. These people were not included for the reason that psychological reaction may vary from one community to another (Page et al., 2009). In other words, people who used to involvement in military action may show different responses to dangerous event than civilians.

The intention was to facilitate a relatively homogenous sample as is required for Interpretative Phenomenological Analysis (IPA) (Smith & Osborn, 2003). Overall, the sample might be skewed toward the younger rather than the average age of people in Iraq.

Clinical and nursing staff at the Ministry of Health (MoH) in Iraq assisted with recruitment and they were in place to assist anyone who might have been psychologically affected (re-traumatised) by the interviews. They were informed by the researcher of the purpose of the study, provided with the selection criteria and asked to identify potential participants from their database. A total of thirty two potential participants were initially identified. All of them were contacted and invited to participate in the study. Twelve people did not wish to take part in the study, with no reason given. The demographic details and some information (e.g. gender, age, marital status, date of incident) of twenty persons were passed on to the researcher. Potential participants were informed about the time table of the interviews.

3.3 Ethical issues

Ethics approval for this project had been obtained from the Faculty of Health Ethics Committee at the University of Plymouth. Potential participants were provided with an information sheet about the study. They were also informed that the interviews would be recorded. The participants were given thorough and essential information about the aims of these interviews. It is important to ensure that other basic principles of ethics are adhered to- i.e. an explanation of the nature and purpose of the research (Light, 2001). Furthermore, the participants were notified that they have a right to withdraw from the study at any stage and for any data collected up to that point to be destroyed should they so wish. They were reassured that withdrawal does not in any way incur any negative consequences and will be fully and readily accepted by the researcher.

All participants were informed in the information sheet provided to them and verbally by the interviewer "the researcher" that they would have an opportunity to discuss their experience of taking part in the study, and were encouraged to raise any questions or concerns. Participants were provided with further information, if requested, such as advice and counselling.

Despite the eagerness of the researcher to obtain data for his study, he greatly respects human privacy. Therefore, the recordings were kept in the researcher's personal computer and a computer belonging to the University of Plymouth, both of which were password protected. The recordings and the information of this study were not seen or listened to by anyone apart from the supervisory team. Then, the data was backed up onto CDs and then stored in a locked filling cabinet at Al-Anbar University when the researcher was in Iraq and at the University of Plymouth, when he returned to Plymouth.

All data collected was anonymised. It was stored in an encrypted form on a computer database which was security protected. In any publications resulting from

this project, all names and personal identifiers were altered and any details of participants which could lead to them being identified were changed. Other data in hard copy, such as field notes and paper inventories were stored in a safe, locked cupboard on the university site and during collection, in a locked secure room in Iraq. On completed psychological inventories, names were replaced by a code held by the researcher.

3.4 Materials

An interview was the means of data collection. The purpose of using interviews in this study is to provide in-depth information and gather a broad range of description about the bombing experience. In-depth interviews allow a holistic view of the participants experience and their context, including details of their beliefs and feelings, and elicit a richer and bigger picture of participant's thinking (Barriball & While, 1994).

The interviews were semi-structured, for three substantial reasons. Firstly, this type of interview is regarded as suitable for the exploration of perceptions and opinions of respondents regarding complex and sometimes sensitive issues, enabling probing for more information and clarification of answers. Secondly, the varied nature of educational backgrounds, personal histories, and likely severity of the experiences of the participants lent itself to this type of interview. Finally, this type of interview is very suitable for obtaining in-depth information and gathering a broad range of descriptions about personal experiences (Wengraf, 2001).

It has been argued that semi-structured interviews are much more complex and require more skills to administer than structured interviews. Moreover, the construction of the questions and responses of the participants to all the questions in other interviews (e.g. standard interview) could assure the researcher that the differences in the responses are due to differences among the participants rather

than in the questions (Hutchinson & Skodol-Wilson, 1992). However, semi-structured interviews are more free-wheeling, conversational, and able to stimulate the interviewee's responses (Smith, 1992).

In accordance with the structure of the interview schedule and the intended procedure, which was prepared by the researcher and the supervisory team, open-ended questions were used to obtain participants' information regarding the bombing. Such questions have advantages compared with other types of questions such as closed questions (Ivis, Bondy, & Adlaf, 1997). They allow the respondent to express opinions and interpretations without being influenced by the researcher, whereas closed questions limit the respondent to the set of alternatives being offered. They also encourage the possibility of discovering responses that participants might give spontaneously, thus avoiding the bias that may result from suggesting responses to individuals; a bias that might occur with closed questions (Krueger & Casey, 2000).

All the interviews were conducted by the researcher. They addressed several issues: (i) information about the participants, (ii) describing the incident in detail, (iii) identifying ways of coping with the incident, (iv) detailing effects of the incident, and (v) talking about the post-incident period. The duration of each interview was between 62 to 91 minutes and the average time was 75.5 min (Smith & Osborn, 2003). The interviews were audio-taped and transcribed verbatim.

3.5 Procedure

The researcher made contact with the twenty potential participants who met the inclusion criteria and wished to take part in this study. Once initial consent was obtained, participants were given symbolised information sheets and asked to send back an 'opt-in' form should they wish to take part. The researcher described fully what the research would involve and allowed the participants to ask any question they wished. All twenty participants who were identified agreed to take part in the study and signed the consent form before the interviews. They were also informed of a mutual convenient date schedule for the interviews to take place a few days later.

It has been emphasized that the location of the interview can make a difference; therefore a context was sought that was relatively neutral and not too problematic for the participants in terms of access and travel time (Smith & Osborn, 2003). The researcher met with 11 of the participants (n=7 male, n=4 female) in a hall at the MoH-Baghdad and 9 people (n=4 male, n=5 female) at Al-Anbar University. Thus, participants who are living in Baghdad and other nearby provinces were interviewed at the MoH, whereas participants who lived near Al- Anbar province were interviewed at Al-Anbar University. Care was taken, given the sensitive nature of the material, to assist participants to feel as comfortable as possible in a setting that was relatively accessible and with which they were familiar (Smith & Osborn, 2003).

In each interview, the researcher introduced himself fully and expressed appreciation to the participants for taking part in this study. The researcher also expressed that their experience is important and indeed most valuable for both the medical and psychological professionals, and the people concerned. Participants were encouraged to talk freely about their experience. They were also allowed to take a break if they wished to, due to the sensitivity of some questions (e.g. can you describe in detail the bombing attack incident? What happened? How did you feel?

What did you think? What did you do? How did you experience the incident? What effect do you think the incident has had on you?). Each interview was conducted without interruption, apart from two. Almost 30 minutes into the interview, Sarah "pseudonym" asked for a postponement till the next day due to "flashbacks" during the interview. A second person, Samir "pseudonym", was not able to continue remembering what he described as "the horrible day", so he was offered the opportunity to stop and complete the interview the next day.

3.5.1 Qualitative analysis

IPA was the approach chosen, as the study aimed to analyse the data and gain an insight into the experience of the participants. IPA is a qualitative method used to explore how individuals perceive a particular situation faced, how they interpret and make sense of their own experience, social world, and personal dilemmas, and also to search for common themes to emerge across the sample group.

IPA was adopted for a number of reasons. First, the method allows an exploration of relatively stable themes, schemes, and mental representations in people's thinking regarding how they make sense of their own experiences of an incident; in this case a bombing attack. Second, it gives researchers opportunity to achieve a thorough and detailed understanding of the participant's perceptions and perspectives of self in relation to the situation concerned (Smith & Osborn, 2003).

IPA was chosen in contrast to discourse analysis which is less concerned with stable schemas/ representations and more with what purpose talk serves in people's account making. Narrative approaches are more concerned with changes over time and the way experience is formed into stories. Grounded theory shares with IPA an emphasis on the study of the phenomena of mental experience but makes bigger claims to develop a body of theory. Instead, IPA offers a more local

analysis of how a relatively homogenous group makes sense a particular set of events or experiences in order to draw out common themes (Smith & Osborn, 2003).

3.5.2 Credibility Checks and Procedure of Analysis

The list of questions in English was translated by the researcher into Arabic and evaluated by two professional interpreters who speak Arabic as a first language and were competent in the English language. All the interviews were conducted and transcribed verbatim in Arabic, and translated back into English by the researcher. In order to verify the accuracy of the back-translation, the English and Arabic versions of the “interview transcriptions” were given, without the biographical details, to the two professional interpreters who helped with the translation of the question structure. Both of the translators had lived in English speaking countries for several years and earned part of their income as professional interpreters. The accuracy of the interviews was then discussed with the translators, with emphasis on where discrepancies were noted, where there was not a uniform interpretation or where a difficult word or question was evident.

The English transcripts of the interviews were read repeatedly by the researcher and the supervisory team, in order to conduct preliminary observations and identify points of interest. To devise themes, the researcher tried to understand the content and engage in interpretative relationships with the transcripts. The researcher then started looking in detail at the transcript of one interview before moving on to examine the others, case by case. The transcript was read a number of times; the left-hand margin was used to annotate what were regarded initially as interesting and significant issues about what the respondent said. To be as familiar as possible with the account, the transcript was read closely over and over. Each reading had the potential to throw up new insights. Afterward, the researcher moved through the transcripts one by one to comment on similarities and differences, echoes, amplifications and contradictions in what a respondent was saying.

The researcher extracted the themes by transforming all the initial notes into themes. The emergent themes were listed on a sheet of paper, and investigated for connections between themes. Then, the researcher did more analytical ordering and tried to make sense of the connections between the themes which were emerging. Some of the themes were clustered together, and some emerged as super-ordinate themes. The transformation of initial notes into themes was continued through the whole transcript.

3.5.3 Validity Enhancement

Semi-structured qualitative interviews do not aim to produce 'objective' evidence and the notions of reliability and validity are considered in terms of relevance and rigour:

1. Audit trail. The researcher kept a diary of the process of analysis and the steps in the process of inferences, from initial codings to the development of the super-ordinate themes. He also maintained a reflective diary considering how his own attitude and experiences may have influenced the process of interpretation.
2. The two research's supervisors also conducted an independent audit trail of the process of the analysis, and there was agreement over the clustered themes after some lengthy discussion between the supervisors and the researcher. Thus, once researcher and supervisors confirmed the analysis, the super-ordinate themes were deemed to be appropriate.
3. Independent analysis. The researcher conducted interpretation and analysis clustered these preliminary IPA observations/notes into sub-ordinate and super-ordinate themes. One of the supervisors (RD) also conducted an independent analysis of a proportion of the transcripts to enhance the validity of the analysis.
4. The themes are supported by substantive quotes to illustrate the themes.

5. A form of 'bracketing interview' took place such that the researcher discussed with the supervisors, e.g. his own experience in Iraq and how these influenced his analysis.

3.6 RESULTS

This section illustrates the results of the study that was conducted with the aim to explore how people who have experienced a bomb attack make sense of their experience and attempt to identify ways in which to cope with it. A thorough description of the participants of this study will be firstly given.

3.6.1 Characteristics of the participants

A total of twenty individuals who survived a bomb attack in Iraq participated in the study (see Table 3.1). The 20 individuals had a mean age of 25.90 years (SD=5.04). Over half were married, and the rest were single. Only 1 participant was widowed. In terms of educational level, more than a half had received education ranging from primary to secondary. The rest had attended university and obtained bachelor degrees and postgraduate qualifications. All the participants identified themselves as Muslims.

All of the bombing incidents had taken place in 2009, apart from one, with none of the participants being involved in the same incident. The average time between exposure to the bombing and the interviews ranged from 61 to 331 days, with a mean gap of 181. 25 days (SD=74.58).

As a result of the bomb attack, nine participants had been injured. Out of the nine individuals who had been injured, five were female and four were male. Pain and severity of the injuries also varied. Whereas seven participants (three men and four women) reported that the injury was a little bit and moderately painful, two

described their injury as severe and very painful. The majority of the participants (n=14) exposed to the bombing were outside home (e.g. work, market, walking in the street, University), whereas some (n=6) reported that they were at home when the bombing happened.

Medical files indicated that all the participants were physically healthy and did not suffer from any major health problems. Medical files also showed that those who had been injured had received physical treatment, but not psychological therapy. So, participants had not been psychologically assessed and had not received a prior diagnosis of PTSD. This is due to the lack of availability of sufficient facilities (or professionals) offering psychological assessment and psychotherapy in Iraq and, in general, the medical service system. For example there is no General Practice (GP) in Iraq which could be a point of referral and advice for people with indications of trauma. When anyone is exposed to a bomb attack or any other incident, he/she will be taken directly to a hospital for treatment. Moreover, in Iraq, the process of the treatment is focused on physical treatment more than psychological rehabilitation.

Table 3.1 Summary of the demographic details of participants

Name of participants*	Gender	Marital Status	Age	Religion	Educational level	Occupation	Date of incident	Date of the interview
Ala'a	Female	Single	25	Muslim	University	Student	March 09	Oct. 09
Husain	Male	Single	20	Muslim	Primary	Unemployed	Aug. 09	Oct. 09
Laith	Male	Married	25	Muslim	Secondary	Factory worker	March 09	Oct. 09
Wisam	Male	Married	28	Muslim	Secondary	Shop assistance	May 09	Oct. 09
Ali	Male	Married	32	Muslim	University	Teacher	April 09	Oct. 09
Qusai	Male	Single	33	Muslim	University	University lecturer	July 09	Oct. 09
Nihad	Male	Single	27	Muslim	Primary	Salesman	March 09	Oct. 09
Marwa	Female	Married	37	Muslim	University	Teacher	July 09	Oct. 09
Rami	Male	Married	30	Muslim	Secondary	Self-employed	June 09	Oct. 09
Noor	Female	Married	19	Muslim	University	Student	Feb. 09	Oct. 09
Huda	Female	Married	28	Muslim	Secondary	Housewife	July 09	Oct. 09
Samir	Male	Single	24	Muslim	University	Engineer	July 09	Oct. 09
Maha	Female	Single	21	Muslim	Primary	Housewife	Aug. 09	Oct. 09
Omar	Male	Married	26	Muslim	Secondary	Mechanic	Feb. 09	Nov. 09
Faris	Male	Single	21	Muslim	Primary	Unemployed	May 09	Nov. 09
Eman	Female	Widowed	31	Muslim	University	Nurse	Dec. 08	Nov. 09
Sarah	Female	Married	27	Muslim	Primary	Housewife	Jan. 09	Nov. 09
Nadine	Female	Single	19	Muslim	University	Student	April 09	Nov. 09
Suha	Female	Married	25	Muslim	Secondary	Housewife	March 09	Nov. 09
Sahar	Female	Married	20	Muslim	University	Student	May 09	Nov. 09

*All participants' names have been changed to protect confidentiality

3.6.2 Super and sub-ordinate themes

The twenty interviews resulted in seven super-ordinate themes; (1) Mental and Physical health problems; (2) Interpersonal relationships; (3) Loss of self; (4) Changes in attachment; (5) Shattering of world assumptions; (6) Existential issues; and (7) Attempting to cope. The sub-ordinate themes, which constituted the source of each master theme, and the master themes themselves (see Table 3.2) will be discussed in turn respectively. Pseudonyms are used throughout this section for the participants as illustrated in table (3.1).

Table 3.2 Super and sub-ordinate themes

Super-ordinate themes	Sub-ordinate themes
Mental and physical health problems	Depression, anger/irritability, anxiety, headache, heart rate faster than usual, stomach problems- intrusions of painful, frightening memories- loss of control, inability to stop these.
Interpersonal relationships	Withdrawal from social life, loss of interest in friendship/intimate relationship, argument/conflict with people.
Loss of self	Personality change-failing, inability to concentrate, moodiness
Changes in attachment	Worry of being close to others, difficulty trusting others
Shattering of world assumptions	Noticing danger more, preoccupation with danger, Iraq as dangerous, difficulty overcoming trauma in the context of continual danger
Existential issues	Ultimate concerns: meaning in life, future, preoccupation with death.
Attempting to cope	Religious coping-value of God, avoidant coping: tried but do not work, escape-avoidance, recovery therapy-moving country, seeking support from family members.

1. Mental and physical health problems

This theme emerged from the participants' accounts of the bombing experience as having a dramatic and negative experience on their health. They were aware that deterioration in their physical health was related to and probably caused by the experience of the bombing. In effect they appeared to realize that this also produced a range of psychosomatic symptoms, in that the emotional distress was being presented as a range of embodied states and illnesses.

> *"The impacts of the incident were a lot; a constant headache, stomach problems and fear from everything. I can't get rid of all these things" (Ali).*

The common reported symptoms were: amnesia, emotional intolerance, dizziness, having a heavy head or constant headache, insomnia, disturbances of metabolism and nutrition. Also there were cases of diabetes, ulcers and endocrinological diseases.

> *"There is a pressure on my head and it presses strongly. It makes me feel dizzy, forget things, but not the important ones" (Sarah).*

People seemed to experience profound emotional effects due to the bombing. This pain and stress was mostly seen through somatization symptoms and anxiety. Other symptoms reported were survivor guilt, traumatic dreams and flashbacks, avoidance of places and memories related to the bombing and emotional detachment. Those that were closer to the explosion reported higher levels of anxiety than those who were located farther away.

> *"Stomach disorders never leave me even now, especially when I remember the incident ... I do feel worry about silly and important things" (Rami).*
>
> *"It is unlikely to have a sleep without nightmares about the bombing" (Omar).*
>
> *"I feel guilt for what happened to the victims. I hate the place of the bombing. I don't want to go there" (Eman).*

Even a relatively long time since exposure to the bombing, participants were still reporting higher levels of anxiety and frustration. Such symptoms would seem understandable given what people in Iraq face almost constantly.

"I'm unable to play football anymore because I lost my leg. When I see my friends playing football, I feel despair, frustration and helplessness" (Faris).

The bombing experience, whether psychological or physical, had a significant negative effect when details of it were remembered, such that the incident appeared to be cemented in their minds. These memories appeared to stimulate physical and psychological problems. In addition, the scene of the bombing also had a significant impact in re-stimulating negative feelings and "reflections".

"A couple of days ago, my city was exposed to a huge explosion. My legs were shivering. I got pain in my stomach. And such, every time when I remember the incident" (Suha).

The important thing to note is that these problems were often seen as pernicious, long-standing, embracing a variety of physical disorders sustained by the survivors, and had not existed before the bombing.

"I would never get rid of the horrible things that I saw" (Nadine).

"I was optimistic and love life. I became pessimistic. I was energetic and love sport, but after the incident I became lazy and isolated. I don't like to go out with anyone" (Nihad).

2. Interpersonal relationships

When trying to analyze the impact of the bombing attack experience, I wondered about the enormous emotional impact of such an experience on interpersonal relationships, as evidenced by the interviews. This was influenced by my own experiences, as an Iraqi citizen, of seeing the impact on relationships. Therefore, care was taken not to read these accounts too negatively and also to look for any indications that relationships may also have become closer and more supportive. Many of the accounts from the participants revealed that the experience had had a deleterious effect in this regard.

"Friendships and social relationships are not important at all. There are no real friendships in this world" (Samir).

Some of the accounts indicated that participants noticed themselves as wishing to cut off from others and withdraw socially. This was also more broadly related to a sense of losing trust in others.

> *"I prefer to stay alone, because I don't trust others" (Sarah).*

The participants also described that they experienced a sense of unwillingness to engage in interpersonal relationships and a seeking to withdraw from social life, a loss of interest in friendship/intimate relationship, argument/conflict with others and a struggle to retain old friendships. In other words, intimate relationships were affected in both quality and stability. However, they described that this withdrawal was not simply deliberate but largely out of their control. Associated with this was felt a loss of desire for intimacy or sexual contact.

> *"I have no ability to engage in any intimate relationship with any girl. I lost this meaning. I lost the meaning to be desired by girls. This thing does not mean anything to me" (Omar).*

> *"I fear people, so most of my relationships have been terminated. I have no friends just one. My feeling about people has changed from good to bad" (Suha).*

The participants also described that they felt upset and weak, and avoided talking with others. Moreover, most reported isolation symptoms and negative personal emotions towards others.

> *"I don't have the ability to sit and talk with my friends more than ten or fifteen minutes. Honestly, people look scary" (Nihad).*

As the victims of the attack were Iraqi citizens and the attack itself took place in Iraq, participants highlighted more intense personal negative emotional responses towards others, which makes them show no sympathy to others and have conflictive social relations.

> *"The bombing could happen again. So, I decided to stay away from people" (Sarah).*

Along with the reaction of the negative personal emotions, interviews showed that the emotional atmosphere following the bombing was affected and did not improve as

more time passed since the bombing. Social relations with others were still wrapped with fear and concerns that these might cause harm and trouble.

> *"Despite that the bombing happened since few months, I still don't show courtesy when I see friends and some relatives as I used to. Nothing is guaranteed. People can do everything bad nowadays" (Nadine).*

Finally, participants highlighted a low level of solidarity responses, social sharing and thinking or rumination accompanied by a decrease in spontaneous bonding.

> *"I can't accept others' opinions and I don't share with them mine" (Sahar).*

3. Loss of self

This theme captured the sense of loss of self. Participants saw themselves as no longer their old self, but as becoming self-absorbed, aloof, disconnected, angry or short tempered. The accounts suggest that they saw themselves as not wishing to have social contact with others, conversations about the dangerous event are avoided, social agencies are mistrusted and criticized, and there is often an undertone of anger and frustration. Loss of personal interests and loss of relationships with others was a feeling that such as a loss might lead to the deterioration of the self. This loss of self was conspicuous, in which several patterns emerged, including mood swings and a psychological imbalance. This is the central meaning of this theme. It was noticeable that a participant's opinion and feeling about their personality had changed for the worse, both in terms of their behaviour and in their relationships with others, compared to the period before the incident.

> *"I feel like I am another person" (Huda).*

It is therefore undeniably true that participants had problems with concentrating. Nevertheless, they were preoccupied most of the time with the incident's details. Arguably, this could be considered a significant sign of personality changes.

> *"My father was talking to me yesterday and when he finished I said "ha"? What did you say? To be honest, I was thinking of the incident" (Husain).*

Participants repeatedly found themselves experiencing the fluctuating state of nervousness and having temper tantrums, unpleasant feelings, hesitation and perplexity in making decisions. These aspects were also seen as uncharacteristic of who they "really" are, as something uncharacteristic.

> *"I feel nervous for every reason and for no reason" (Noor).*

4. Change close relationships

There were individual differences in the way that the participants appraised the attachment figure and how they regulated their attachment styles after their experience of the bombing. The theme 'changes in attachment' can be seen to connect with the concept of insecure attachment and high levels of avoidant attachment strategies. Participants discussed how their own experience affected their level of attachment with others.

> *"It is not easy to become close to others. Sometimes, I feel uncomfortable being close to others" (Eman).*

Relationship effects that seemed to correlate with the bombing and affected attachment patterns included: difficulty trusting others and perplexity in styles of relating and attachment.

> *"I prefer to stay alone, because I don't trust others" (Sarah).*

5. Shattering of world assumptions

This is the idea that a participant's sense of the world and their lives had changed dramatically in terms of perceived safety and danger and community circumstances following the bombing. In particular, the world, to them, is a dangerous place and the community had changed for the worse.

> *"Danger is everywhere, there is no safe place. People were not evil like nowadays, life was not miserable like now" (Qusai).*

It could be argued here that an experience of a bombing attack can shatter assumptions that the individual used to believe in prior to the event. Feeling safe was

one of these implicit assumptions and they viewed the world, particularly after the incident, as dangerous and unsafe. More generally, they perceived life as being surrounded by death, ordeals, and hardships, which to some extent they had been able to keep out of their attention. More important, such shattering of their assumptions altered how they saw the world, which also led to a distrust of others and the perception that people are dangerous, or in short, that human beings are not good.

"We are living in a world filled with danger and hatred" (Maha).

Thus, participants' assumptions about safety went beyond the trauma inducing they personally experienced, to reach the whole society and in particular the general living circumstances of their community, leading to the belief that society was dangerous and that the community is no longer safe. It is worthwhile mentioning here that these changed perceptions about the communities' circumstances have had a significant role in shattering participants' assumptions about safety and who and what they considered safe in general before the incident, that is, people and the world, respectively. The emergence of these traits in participants' personalities is a result of strong challenges to an individual's intellect vis-à-vis their assumptions about safety and danger. The conflict between these assumptions in a community led to assumptions about how it has been filled with danger and led to changes in individuals' thoughts and behaviours for the worse.

"We are living in the country of blood" (Noor).

6. Existential issues

Participants expressed confusion, lack of confidence and concerns about the future. In addition, preoccupation with death and a permanent sense of threat dominated their thinking. Thus, when they looked to the future, they found it dark and anticipated a range of negative things that could happen. In other words, the feelings of pain and fear that participants experienced had influenced their views about the future. The

experience of being in a bomb attack had led to the weakening of the capacity of participants to see and plan for the future realistically and effectively.

"[Laugh] future?!! I can't imagine there is a future after that day" (Wisam).

Furthermore, preoccupation with death and an inability to cling to life led to changes in their perspective. Life after the bombing has become worthless and meaningless. Life is tragic and painful. This perspective toward life never existed before the incident.

"Life is meaningless" (Maha).

7. Attempting to cope

Participants reported different strategies that they used to cope, not only with the effects of the bombing but also with other life difficulties that coincided with the bomb attack. Featuring in these coping strategies were religious beliefs involving receiving support from God, prayer and reading the Quran. These strategies might have influenced the psychological outcomes and played an important role in toleration of the effects of the bombing. When participants were asked how they coped with the bombing, Faris for instance, said:

"Continuous prayer and reading the Quran"

In conjunction with religious coping, participants made considerable use of social support from a range of sources. The majority of the participants were married and, for the older participants in particular, their experience seemed to have been a shared one with their spouse. The participants' spouses and other close relatives were a key and valued source of support.

"Without my wife's support, things might be more difficult" (Samir).

Participants' intact social support system might be a favorable prognostic sign for future adjustment. This support seemed to help with participants' perspective toward their current situation and life in general, mediated the effects of distress and

influenced the development of posttraumatic symptoms. With social support, they felt stronger to cope with the effect of bombing.

> *"My uncle supported me and helped me a lot to get out of this ordeal. He was ready to do anything to make me feel happy" (Marwa).*

Just knowing that friends and family were thinking of them was also helpful. This was associated particularly with religion and friends from the Mosque who could pray and make supplication to God for them.

> *"My friends send me healing by making supplications to God to help me. The thought of someone caring for me that much is rather great" (Omar).*

The participants also highlighted another sources of coping, the value of sharing their own and hearing about others' experience of bombing.

> *"Personally, I found it very positive to talk with people who had similar experience. It gives you something in common to talk about" (Ali).*

Avoidance of physical locations and thinking about the experience were notable strategies used by the participants. There appeared to be a belief that avoiding the place where the bombing occurred and crowded places, and avoiding thinking about the experience could prevent the onset of painful feelings, sorrowful memories and depression.

> *"One must keep away from the place of the incident and avoid thinking about the incident; otherwise he will be an easy prey to depression" (Ala'a)*

> *"I deliberately, don't think about the bombing. My parents also keep telling me to do so" (Maha).*

> *"I think it is not good to think about it [the incident] because thinking about it could bring lots of bad things and could make me depressed" (Eman).*

On the whole participants spoke critically about the lack of psychological support and care they received from the medical profession. The majority of the participants found the hospital experience did not provide a sense of safety and of being looked after. Others referred to the poor monitoring role and provision of information from health professionals, and all the participants talked negatively about the reassurances they received from those caring for them. The notable exceptions to this were particular

personnel who were perceived as helpful and the abundance of emotional support from some medical professionals. Ultimately, there was a cure for the unbelievable psychological pain and the long-term effects that the survivors endured.

3.7 DISCUSSION

The existing literature largely neglects civilians' personal experience of bombing in Iraq, in favour of veterans deployed in Iraq. The current study aimed to address this imbalance by asking local people about their experience of being in a bomb attack and how they coped. It was anticipated that this would be relevant to those caring for people in this situation and also be of interest to those who themselves have been exposed to bombing. The results of this study indicated that even though there were considerable individual variations in the level of 'psychopathological' symptoms found at the individual level, there were also some common themes in how people experienced such attacks and the strategies they later used to cope with the adverse after effects of the incident.

In speaking of their experience of being in a bomb attack, the participants highlighted several psychological and physical impacts in relation to the bomb attack itself and perhaps unexpectedly in relation to other life circumstances. The findings also suggested that there was an impact on personal relationships with others related to specific stages such as early days after the bombing. It was also found that the experience negatively affected the attachment patterns and the view towards the self, life, the future, and some existential issues such as meaning in life and death. When speaking about how they were able to tolerate the bombing, participants seemed to rely on a process of religious coping, such as reading the Quran and prayer. In conjunction with self-initiated coping responses, participants also received social support from a range of different sources, which facilitated the coping process.

The accounts suggest that the bombing was experienced as traumatic. Hence, the themes that emerged can be referred to as falling within the notion of a *'traumatised sense of self'*. This affected sense of self inevitably involves a great deal of psychological and physical distress. Each theme presented related to different aspects of the experience described by the participants. The first major theme *'physical and mental health'* highlights significant effects on participants. This finding is evident in existing literature. Studies indicate that PTSD is associated with undermined mental and physical health status (e.g. more physical health symptoms, and visits to health care professionals) among victims who have been exposed to bombing (Grieger et al., 2006).

At the same time this sense of self is characterized by problems with social and interpersonal difficulties in relating to other people. The major theme of *'interpersonal relationships'* highlights this dilemma. For example, participants frequently mentioned difficulties with social and personal relationships; including withdrawal from social life and avoiding talking with others, loss of interest in friendship/intimate relationships and becoming argumentative/conflictual with people. This theme highlighted losing interest in relationships with others and behaving as a somewhat different person. This theme also captured a sense of relationships becoming difficult because participants felt themselves to be a different, altered or damaged person who could not relate as before the attack.

The theme of changed self also connected with the participants' notions that the experience had changed them as people, their personality and their 'sense of self'. This was seen typically as a deficit, a loss of their old optimism and abilities to cope. This theme also appeared to connect with other symptoms or traits such as withdrawal and loss of interest in maintaining relationships with others. This sense of *'loss of self'* appeared to contribute to a sense of not being able to cope or to think about themselves and their feelings. Laufer (1988) described the concept of a "serial self", an unsettling sense of shifting and changing experiences of self, which imprints

the experience on the individual and has a disruptive impact in later life. More generally, it may connect with a sense of despair that is characteristic of depression and related to PTSD. PTSD and trauma theory suggests that loss of self relates to an inability to concentrate, mood swings and harmful behaviours (Nevid & Rathus, 2007). Arguably, a coherent and stable sense of self is required to act as a base that a person can use to make sense of the trauma and develop strategies to cope with the posttraumatic symptoms in later life (Janoff-Bulman, 1992).

In the current high-risk sample of adults who had been exposed to a bombing attack, participants demonstrated a predominantly *insecure attachment*. It is plausible to suggest that problems in personal relationships and loss of self can be seen to connect with feelings of lack of security (Benoit et al., 2010) and high levels of avoidance.

Exposure to bombing has been implicated in numerous psychological problems and may affect many aspects of the survivor's life, including cognitions (Ehlers & Clark, 2000). Among the cognitive changes that have been ascribed to exposure to bombing attacks are changes in the individual's assumptions toward the world/self/others. So, as a result of this new self, they no longer trust the world and perceive the world to be dangerous. Scholars such as Janoff-Bulman (1992) argued that some perceptions or world assumptions protect us from fully appreciating our vulnerability and that exposure to a traumatic event unsettles or even shatters the illusion of safety and forces people to examine and revise their assumptions and often replace them with new assumptions with less positivity. In other words, people hold core assumptions about their life and other people, which appear as threatening or challenging and as something highly dangerous. Life-threatening and unexpected events require reflection and opportunities to develop new emotional and behavioural responses to be able to anticipate and plan for the future. The participants in the current study indicated that the areas of core assumption most challenged and likely

to be shattered after exposure to bombing attack were noticing danger more, preoccupation with danger, and Iraq as a dangerous place to live.

The theme *'shattering of world assumptions'* highlights these psychological demands faced by the participants in the current study. The participants spoke about how the circumstances in Iraq nowadays are so dangerous. It was also noticeable that there are many social consequences of the bombing attack both in relation to their social identity and their concerns about other people. Such events often reveal the ultimate fragility of existence and can eventuate in both immediate distress and long-term interruptions to normal functioning with far-reaching consequences for oneself, one's loved ones, and society. Furthermore, it shocks the psychological system and violates core assumptions that life is predictable, safe and secure. The preoccupation with danger and the sense that there is no place safe in Iraq seemed to indicate the incorporation of the bombing attack into their life assumptions. This theme is clearly connected with the work of Janoff-Bulman (1992) who likewise emphasized how experience of highly dangerous events and traumatic reactions can involve a shattering of core assumptions about oneself and the world they are in. Even though the majority of the participants felt that they could rebuild these assumptions positively once they left Iraq, it should be noted that the preoccupation with danger might hamper the positive adjustment.

This "*traumatized self*" appeared to be struggling with *'existential issues'*, confusion and worry about the future. Laufer (1988) argued that exposure to a traumatic event could "shatter" those fundamental assumptions that gave our life meaning and that the resultant emotional upheaval potentially leads to PTSD. This is in line with research that suggests the potential effects of traumatic events lead to PTSD (Martz, 2004). PTSD is believed to result when a traumatic event shatters a person's core beliefs that enables them to establish meaning in life (Herman, 1992) and increases the level of preoccupation with death (Chung, Chung, & Easthope, 2000). This is in line with research that shows that people who report a better

meaning-restructuring coping experience report lower levels of posttraumatic symptoms (Owens, Steger, Whitesell, & Herrera, 2009).

Although experiencing psychological distress such as feeling that the world is dangerous, worrying about the future and struggling to relate to others, participants were *trying to cope* with reality. The reality is that they live in a highly dangerous context and that they have no means to escape, which potentially makes the problem worse. As a result they have to rely on different coping strategies.

It was noticeable that participants received social support from a range of different sources, such as friends and family, which facilitated the coping process. However, in some cases, this attempt at support included encouragement to engage in avoidant strategies, such as trying not to think or talk about the events and to keep feelings suppressed, which appeared to aim at distancing participants from the stress that they might be experiencing. This appears to be a widely shared strategy in Iraq and is understandable in the context of the need to manage the practicalities of life, but in the long-term may prevent emotional processing of the experiences.

Feelings of strength, resilience and power were also seen to be a result of the support that they had received from family and friends. This suggests that social support might play a vital role in promoting resilience, recovery from difficulties and problems, and help with overcoming the effects of dangerous events, leading to improvement of the emotional climate in the aftermath of the bombing attacks. It appeared that social sharing helped people to reconstruct basic assumptions or develop positive beliefs and feelings. Finally, because of the reinforcement of social integration and positive beliefs, social sharing also helped the participants to construct a positive emotional climate, emphasizing trust, hope and positive feelings (Páez et al., 2007). PTSD and trauma theory supports this assumption, suggesting that the decline of PTSD symptoms over time might be due to the support that the person receives from others (Shahar et al., 2009).

Religion was also employed. The affected individuals were trying to cope by turning to religion, reading the Quran, reading religion-based stories and asking for support from God. This finding basically adds support to the existing literature in that religious coping mechanisms help attenuate the effects of negative experiences and generate more positive emotions (Pargament et al., 1990) to cope with the bombing and to enhance feelings of comfort, control and connectedness (Meisenhelder, 2002).

3.8 Clinical Implications

Important implications for clinical practice can be derived from the findings of the current study. For example, professionals are prompted to consider how to provide psychological treatment and engender a positive sense to overcome the negative impact of the bombing experience when people have no control over the bombings itself.

Getting support from spouses, relatives and friends to change the things they can appears to be an important psychological intervention: also, offering forums for emotional expression and facilitating the sharing of experience would seem important. Given the importance of social support, professionals may consider offering assistance to those providing such support, in order that they can continue to do so, thereby strengthening this essential resource.

Religious coping also emerged as a theme but how this helped people varied and it needs to be considered in the light of the other forms of coping and support. For example, solitary prayer may further isolate a person so that they become more withdrawn and lonely. On the other hand taking part in shared prayer may reduce a sense of social isolation.

3.9 LIMITATIONS OF THE STUDY

It has been confirmed that using IPA requires a homogeneous sample (Smith & Osborn, 2003). An attempt has been made to ensure that participants have common experiences and features in as many respects as possible. However, given the time frame available in which to recruit participants, it was not possible to do matching between participants on all aspects that may have had a bearing on the issues they mentioned during the interviews. As an example, whereas some participants reported the bombing attack to have occurred only recently, for others the incident had occurred several months previously, which may also have a bearing on the degree of severity of the experience.

A further potential criticism of this study is that since Iraq is a highly dangerous place, this may have inflated the sense of danger and trauma that participants reported. The difficult circumstances that Iraqi people face, living in such a situation could affect their psychological well-being and generate psychological distress in general.

The language is the key element to describing the participant's experience; furthermore, it's substantial for IPA. A final potential limitation is the validity of translation. Despite the fact that the researcher did his best to make the English version similar to the Arabic version, the translation might still not be very accurate vis-à-vis extracting the appropriate themes from the interview transcripts.

In the light of the findings of this study, the next chapter will test some of the hypotheses pertaining to attachment styles, altered self-capacities, social support and shattered world assumptions.

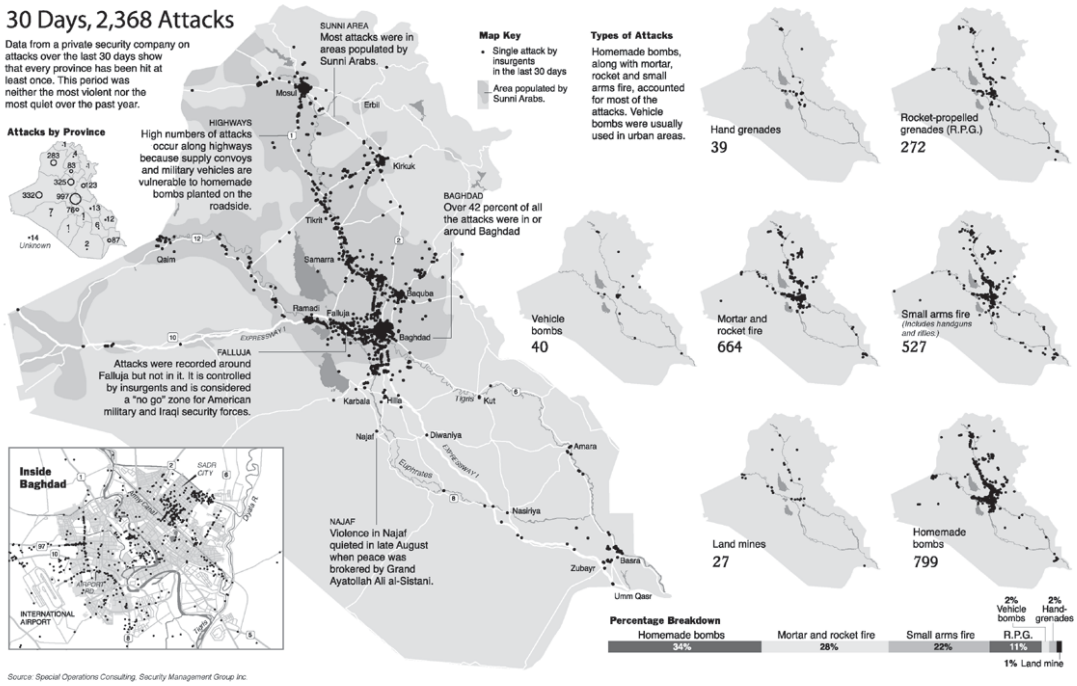
CHAPTER 4

STUDY 2: POST-BOMBING PTSD AND CO-MORBIDITY: THE ROLE OF ATTACHMENT STYLES, ALTERED SELF-CAPACITIES, SOCIAL SUPPORT AND SHATTERED WORLD ASSUMPTIONS

4.1 INTRODUCTION

As was mentioned previously (chapter 1), there has been a dramatic increase in severe conflict, including war and terrorist attacks in Iraq since 2003. The capital, Baghdad, and several other cities have been repeatedly subjected to terrorist bombings (see Figure 4.1).

Figure 4.1 Distribution of bombing attacks in Iraq



Exposure to bombing has been found to lead to many facets and complexities of posttraumatic and psychiatric co-morbidity, and it can trigger psychological problems among its survivors (North et al., 2011). Studies conducted following the Oklahoma City bombing in 1995 and other incidents around the world broadly support findings of severe consequences (North et al., 2011; Page et al., 2009 Verger et al., 2004).

In addition to the development of PTSD symptoms and psychiatric distress, studies proposed that experiencing a bomb attack could lead to psychosocial sequelae, such as loss of personal interest, irritability and hostility (Somasundaram, 1996), work impairment (Tucker et al., 1999), deterioration in relationships with others, and other significant negative aspects of personality changes, such as withdrawal. This loss of self was conspicuous and displayed several patterns including changing mood and psychological imbalance. The experience was also found to have a negative impact on the sense of safety and increased a sense of personal and family vulnerability. Furthermore, there was found to be a "shattering of world assumptions" in the sense of seeing the world and people generally as risky and untrustworthy and feeling negative about the future and the potential for positive change (Freh, Chung, & Dallos, 2013).

A number of theories have been developed regarding the course of outcomes following a traumatic life event. Janoff-Bulman (1992) argues that PTSD or psychiatric co-morbidity arises in two different ways. First, PTSD is thought to occur when survivors fail to readily assimilate or accommodate the lessons from the traumatic event into their global meaning systems or assumptive worlds. That is, people experience symptomatic oscillations between avoiding the trauma material through avoidance (e.g. dissociation and emotional numbing) and confronting the memory of the trauma through intrusive thoughts and nightmares. These symptoms will persist until they engage in sufficient cognitive processing to challenge the

assumptions they hold about the world and the lessons that they learned from the trauma can then be reconciled.

Secondly, trauma-induced reactive depressive symptoms are thought to occur when the assumptive world is revised to reflect uniformly negative beliefs (e.g. events occur at random, the self is unlucky, and the world is a malevolent place) about the world and self (Foa et al., 1999).

Research exploring differences in world assumptions found that people who tend to reflect the most positive assumptions have not experienced trauma, whereas people with past trauma, but not PTSD, subsequently tend to adopt more negative assumptions. On the other hand, people with PTSD or other trauma-related psychopathology tend to reflect the most negative assumptions (Foa et al., 1999; Ehlers & Clark, 2000; Janoff-Bulman, 1992). For example, the assumptions of the people with PTSD reflected that they were both unlucky and that the world was generally non trustworthy. Additionally, holding negative world assumptions was correlated significantly with depression and anxiety (Kutz et al., 2008).

Although preceding literature showed that exposure to potentially traumatic events could cause disorders in the individual's perception of world, others and the future, it could also cause disorders in perceptions of self and relationships with others "altered self-capacities". It has been argued that the inability of the individual to reflect on their experience of the dangerous events could result in a state of imbalance fuelling a traumatic response. According to the altered self-capacity theory, the traumatic event, as a new experience, presents deviant information to the personal experience because it is located outside the range of normal human experience and therefore, it is not expected to occur. When it occurs, however, it poses threat and danger to the survival and safety of the individual. As a result, the person's behaviour can become disordered by withdrawing from social life, changing self-ability, and a disturbance of the normal self-capacity to deal with the trauma effectively (Yehuda & McFarlane, 1995).

Failure of survivors to deal with the traumatic experience effectively, identify, perceive, and give meaning to the traumatic event as a new and dangerous experience might lead to PTSD at different stages (Magwaza, 1999), particularly with people who show delay of comprehension and understanding of the reality of the danger of the incident (Thrasher, Dalgleish, & Yule, 1994). In other words, developing PTSD symptoms could occur in two different ways: 1) emotional reactions followed by denial or attempts at inhibition of personal feelings, 2) distortion of the way that person looks to himself, others, relationships with others and changes in the person's vision to his/her own capabilities.

4.1.1 Aims

In the light of the qualitative findings, the broad question was how the themes identified interrelate to influence the outcome of PTSD and psychiatric co-morbidity. Two studies were designed aimed to address the aforementioned gaps in literature review (see chapter 2), addressing the themes identified in the qualitative study. This present study was mainly designed to examine:

- The prevalence of posttraumatic stress symptoms among civilians who were directly exposed to the bombing attacks.
- The psychiatric co-morbidity with bombing-related PTSD in terms of anxiety, depression, somatic problems and social dysfunction.
- The trajectory of post-bombing PTSD symptoms and psychiatric co-morbidity.
- The distribution and the trajectory of the attachment styles among the sample.
- The relationship between the predictors (past life-threatening event, attachment styles, perceived social support, altered self-capacity, shattering of world assumptions) and the severity of post-bombing PTSD and psychiatric co-morbidity at baseline and follow up.

- The interrelation between predictor variables and post-bombing PTSD and psychiatric co-morbidity.

4.1.2 Hypotheses

In the light of the preceding literature, it has been hypothesized that:

- A significant proportion of people who have been exposed to subjective experience of bombing attack ranging from 34% (North et al., 1999) to 44% (Somasundaram, 1996) will meet the screening criteria for PTSD.
- A proportion of bombing participants will develop psychiatric caseness following their experience. The bombing group will experience more severe psychiatric co-morbidity symptoms in terms of anxiety, depression, somatic problems and social dysfunction compared with the control group.
- Post-bombing PTSD symptoms and psychiatric co-morbidity would decline significantly over time.
- Participants who have experienced bombing will show significantly greater insecure attachment patterns than people who have not.
- Bombing- related insecure attachment will decline over time.
- Insecure patterns will show significantly greater PTSD than secure patterns.
- After controlling for the severity of bombing (in terms of people's subjective indications of their distress following the bombing), one or more of the dimensions of the shattering of world assumptions, altered self-capacity scales, attachment styles and perceived social support are expected to be significantly associated with the outcomes variables. However, it is difficult to speculate at this stage which one will be a significant predictor due to the lack of research evidence.
- The experience of the severity of the bombing is seen as related to subjective appraisal of the effect it had on them and this is connected to a sense of their

world as being unsafe and of vulnerability. Specifically, it was hypothesised that severity of the bombing attack would influence post-bombing PTSD and psychiatric co-morbidity directly.

- The severity of the bombing would influence one or more of the dimensions of the shattering of world assumption, altered self-capacity, attachment styles and perceived social support which, in turn, would influence post-bombing PTSD and psychiatric co-morbidity.

4.2 METHOD

This study employs a longitudinal design aiming to assess changes in distress over time. Ethical approval for this study was obtained in advance from the Faculty of Health ethics committee at the University of Plymouth. In this study, data were gathered from intake self-report questionnaires and medical records for participants who were exposed to bombing attack and consented to take part. Information on their perception of threat from the bombing attack was also collected by using a brief self-constructed questionnaire (will be discussed in more details in section 4.2.3.3).

4.2.1 Power calculation

Power calculation was conducted to estimate the number of participants needed for this study. The power calculation assumed analysis by regression with post-bombing PTSD and psychiatric co-morbidity as dependent variables and four factors for the study (attachment styles, social support, altered self-capacity and shattering of world assumption). With the sample size of approximately 177 for the study and alpha set at $p<.05$, the study would have power .95% [$F(15, 161)=1.72$]. The effect was selected as the medium effect that would be important to detect, in the sense that any smaller effect would not be clinical or of substantive significance.

It is also assumed that this effect size is reasonable, in the sense that an effect of this magnitude could be anticipated in this field of research (Cohen, 1988).

The power calculation assumed analysis by pair *t*-test comparing the severity of the trauma and psychiatric co-morbidity one month and five months following the bombing. With the sample size of approximately 177 for the study and alpha set at $p<.05$, the study would have power 0.90% [$F(15, 161)=1.72$]. The effect was selected as the medium effect that would be important to detect, in the sense that any smaller effect would not be clinical or of substantive significance. It is also assumed that this effect size is reasonable, in the sense that an effect of this magnitude could be anticipated in this field of research (Cohen, 1988).

4.2.2 Sampling and recruitment

Iraqi civilians who were exposed to bombing attack were recruited for this study via MoH-Iraq. The contact with the MoH was made by the researcher to obtain permission to conduct this research.

4.2.2.1 Bombing group (the experimental group)

After the researcher obtained permission, the staff were acquainted with the purpose of the study, given the selection criteria, and asked to identify potential participants.

Participants were included in the study if they were: 1) civilians; 2) exposed to a bombing attack only once; 3) 18 years old or above; 4) able to read and write; 5) onset of bombing is approximately one month after the incident; 6) no previous long term psychiatric history; 7) no cognitive impairment; and 8) able to give consent to participate.

People were not eligible to participate in the study if they were: 1) children or people under 18; 2) with multiple bombing experiences; 3) receiving other

psychological treatment for mental health problems; 4) suffering cognitive impairment; 5) unable to read or write or give consent to the study; 6) soldiers, policemen/women or any member of the Ministry of Defence; and 7) if the period of the incident was less than 1 month prior to the collection of data.

The simply convenience sampling procedure was used. Computerized medical files of all bombing victims in MoH-Iraq were used to identify participants who had been exposed to a bombing attack. The researcher was allowed to look at the lists of people who have been exposed to bombing on the year that the data collection was started (2011). Every list consists of 50 people with all the demographic information (such as, name, marital status, date of birth, gender, time and place of the incident, etc.). The researcher went through the lists one by one, excluding people who did not match the inclusion criteria.

The researcher then focused on people who lived in Baghdad and places near Baghdad since this was more feasible. People were divided into 4 groups by the researcher, according to the date of exposure: a cohort of people who had been exposed recently, 1-3 months ago, people who had been exposed 3-6 months ago, people who had been exposed 6-9 months ago and a group who had been exposed 9 months ago or more. Two-hundred and twenty-seven individuals were identified. Forty-three did not wish to participate (m=24, f= 19). Of those remaining 184 consented to participate, 4 participants were excluded because they were unable to read and write, yielding a final total of 180 participants (m=90, f=90). A full description of the participants and other demographic variables will be discussed in more detail in the results section of this chapter.

4.2.2.2 Non-bombing group (control group)

In order to make comparisons between bombing-related PTSD, PTSD after traumatic life events, psychiatric co-morbidity, attachment styles, altered-self capacity, and shattering of world assumptions, data from people who had not been exposed to a bombing attack in their life was also collected.

The control people were recruited via the MoH. The group was defined as individuals who had never been exposed to or witnessed any bombing attack in their life. The researcher was aware that recruiting the control group from people who did not hear and/or witness bombing in Iraq is almost impossible. However, every effort was made to recruit participants from rural regions that were considered, to some extent, safe: such as North Mosul, West Baghdad and some places in Kurdistan (north of Iraq).

Clinical staff were acquainted of the purpose of the study, given the selection criteria and asked to identify potential participants form their files, that: 1) had not witnessed a bombing attack in his/her life, 2) were civilians, 3) were 18 years old or above, 4) were able to read and write and 5) had no previous long term cognitive impairment. It was hoped that they would be able to recruit a similar number for the control and to match them as far as possible with the demographic characteristics of the experimental group.

Two hundred and seventeen people were identified. During the one month period of data collection, contact by email and phone was made with people who met the inclusion criteria. Due to the unwillingness of 39 people (m=15, f=24) to participate in the study, names and some details of a final sample totalling 178 subjects (m=87 48.9%, f=91 51.1%) who gave verbal consent to participate were passed to the researcher. A full description of the participants of the control group and other demographic variables will be discussed in more detail in the results section of this chapter.

4.2.3 Questionnaires

4.2.3.1 Demographic characteristics

An 8 item demographic questionnaire was included in the study to gather information about participants' gender, age, marital status, ethnicity, employment, education and income level. People were also asked to specify if they have ever suffered from any major life illness including mental illness (see appendix 1).

4.2.3.2 Mini-Mental State Examination (MMSE)

The mini-mental state examination (MMSE) is a brief 30-point test used to screen for cognitive impairment (see appendix 2). It is widely used to estimate the severity of cognitive impairment at a given point in time and to follow the course of cognitive changes for an individual over time. The MMSE is reliable and valid as a screening test for cognitive deficits (Guerrero-Berroa et al., 2009), thus making it an effective way to estimate cognitive impairment. The MMSE test consists of questions and problems in a number of areas covering seven categories concerning an individual's recent memory. The categories usually consist of a number of points; Orientation to time-5 points, Orientation to place-5 points, Registration-3 points, Attention and calculation-5 points, Recall-3 points, Language-2 points, Repetition-1 point and Complex commands-6 points (Espino, Lichtenstein, Palmer, & Hazuda, 2004).

According to the total score on the MMSE test, cognitive impairment is divided into four levels with >25 considered normal; 21-24 as a mild impairment; 10-20 as a moderate, and <10 as a severe impairment. Since the medical files showed that that majority of the participants did not suffer from any major diseases, and to enhance sensitivity for mild impairment (Kay et al., 1985), >24 was used as a cut-off score to identify the cognitive impairment for the participants of this project. The long version 30-point was used in this project due to unavailability of the short version in Arabic.

4.2.3.3 Predictor measures

1- Perceived Life Threat (Bombing Experience Questionnaire)

A self-report questionnaire was developed by the researcher to collect information about peritraumatic and posttraumatic risk factors associated with the bombing. A list of possible involvement experiences during the bombing was created according to literature in this field (Page et al., 2009; Verger et al., 2004) and participants ticked those that applied to them (see appendix 3). These bombing experience variables assessed a variety of problems they might have experienced in function response to their exposure to the bombing attack. Risk factors were identified in three partially overlapping domains: 1- level of perceived threat to life before the bombing (2 questions coded into yes and no categories e.g. did you anticipate that you would be involved in a bombing attack one day?). Questions were rated on a 2-point intensity scale (0=yes; 1=no); 2- level of perceived threat to life during the bombing (this section comprised 10 questions coded into yes and no categories e.g. did you feel you lost control of yourself?, 5 questions coded into 4 point scales e.g. Did you feel isolated and alone during the attack? Questions in this section were rated on a 4-point intensity scale (0=not at all; 3= completely), and 1 open ended question e.g. which parts of your body were injured?); and 3- level of perceived threat to life after the bombing (3 questions coded into yes and no categories e.g. were you taken to a hospital?, and 5 questions coded into 4 point scales e.g. do you deliberately stay at home and avoid going out in case you experience another bombing?

2- Attachment Styles

To assess a variety of attachment styles in this study, the Relationship Scales Questionnaire (RSQ-30) was used (see appendix 6). The RSQ is a 30-item questionnaire requiring participants to rate, on a 5-point Likert-type scale, the extent to which these statements describe their feelings about close relationships (1= not at

all like me, 5= very much like me). Items are summed to create four subscales-secure, fearful, preoccupied and dismissing attachment styles. The statements are derived from previous measures including the Adult Attachment Questionnaire (AAQ) (Hazan & Shaver, 1987), Adult Attachment Scale (AAS) (Collins & Read, 1990), and Relationship Questionnaire (RQ) (Bartholomew & Horowitz, 1991).

The RSQ-30 has sound psychometric properties, and concurrent validity with significant correlations with Hazan and Shaver's scale, and Collins and Read's scale. A study used data from heterosexual couples showed Cronbach alphas (averaged over partners) of .50, .73 and .73 for Hazan and Shaver's secure, anxious, and avoidant scales, respectively, and alphas ranging from .73 to .78 for Collins and Read's dependency, anxiety, and closeness scales (Griffin & Bartholomew, 1994).

3- Altered Self-Capacity

Several questionnaires were found to test symptoms relevant to altered self-capacity, including the Millon Clinical Multiaxial Inventory-III (MCMI-III) (Millon, Davis, & Millon, 1997), the Personality Assessment Inventory (PAI) (Morey & Ambwani, 2008) and the Bell Object Relations and Reality Testing Inventory (BORRTI) (Bell, 1995). However, none of these questionnaires was suitable for this study for the following reasons: The MCMI-III assesses a variety of Axis-II concerns, nevertheless it is generally conceptualizes them as disorders, more than specific self-capacity problems.

The PAI generates not only diagnostic information (e.g. the Borderline Features and Antisocial Features scales) but also four Borderline subscales that tap certain self-capacity-related phenomena (i.e. Affective Instability, Identity Problems, Negative Relationships and Self-Harm). Therefore, this questionnaire might be the best of this type. However, PAI is not applicable for this study since administration of

the entire 344-item PAI is required to obtain this information, and not all aspects of self-capacity are evaluated by these subscales.

The BORRTI, as the only standardized test of disturbed object relations, yields four object relations constructs- alienation, insecure attachment, egocentricity and social incompetence- that are tangentially related to self-functioning. This questionnaire was found not appropriate for the reason that the validity of the questionnaire is questionable. Therefore, it might be not the best measure to use.

In the light of these problems, the Inventory of Altered Self-Capacities (IASC) was chosen to test symptoms relevant to altered self-capacity (see appendix 7). The IASC was developed by Briere and Runtz (2002). The IASC is a relatively brief 63 items to assess the disturbance functioning in relation to self and others. It also evaluates seven types of self-capacity disturbance: Affect Dysregulation (AD), Identity Impairment (II), Idealization Disillusionment (ID), Abandonment Concerns (AC), Susceptibility to Influence (SI), Interpersonal Conflict (IC) and Tension Reduction Activities (TRA). The IASC was rated according to the rating scale: 1=never, 2=once or twice, 3= sometimes, 4= often and 5= very often.

The IASC has sound psychometric properties. Reliability (Cronbach's alphas) coefficients for IASC subscales ranged from .78 to .93 with an average of .89 (Briere & Runtz, 2002).

4- Shattering of World Assumptions

Traumatic and dangerous events are able to produce psychological distress and shatter some of survivors' fundamental assumptions about the world. To examine the effects of the bombing attack experience on survivors' fundamental assumptions, the World Assumptions Scale (WAS) was used (see appendix 8). The WAS was developed by Kaler (2009) using exploratory factor analysis to differentiate between trauma and no-trauma groups. The scale consists of 22 items yielding 4 subscales: Controllability of Events (CE), Comprehensibility and Predictability of People (CPP),

Trustworthiness and Goodness of People (TGP) and Safety and Vulnerability (SV). The TGP and SV comprised of 6 items, whereas CE and CPP 5 items. The items are measured on a 6-point Likert scale (anchored by "strongly agree" and "strongly disagree"). The psychometric properties of the WAS has been proven by studies. Cronbach's αs for the WAS ranged from .74 to .82 (M=.78), Coefficients ranged from .68 to .74 (M = .70) (Kaler, 2009).

Low scores on each of the subscales indicate assumptions that: events in the world cannot be controlled by people's behaviours (controllability of events). Low scores on the worthiness subscale indicate assumptions that: one is not a worthy or virtuous person (Trustworthiness and Goodness of People) and one is unsafe in this world (Safety and Vulnerability). Low scores on the Comprehensibility and predictability of people subscale indicate that people behaviour and thinking is unpredictable.

5. Crisis Social Support

To measure perceived social support after exposure to the bombing experience, Crisis Social Support (CSS) scale was used. The CSS was originally developed by Andrews and Brown (1988). The scale consists of seven items that are asked twice, one following the disaster which is in this case bombing attack (T1), and at the present time (T2) on a seven-point Likert scale ranging from never (1) to always (7) (see appendix 9). High scores on CSS represent a high level of social support, while low scores indicate low level of support. Studies e.g. Joseph, Williams, & Yule (1992) showed that T1 and T2 scores have a high internal consistency (Cronbach's alpha=.80). It would seem that the CSS is a valid, robust, and useful scale to assess social support, in particular due to the psychometric properties, its brevity and inclusion of multi-dimensional aspects of social support (Elklit, Pederson, & Jind, 2001).

4.2.3.4 Outcome measures

1. Posttraumatic Stress Disorder symptoms (PTSD)

To assess the PTSD symptoms, the self-report Posttraumatic Stress Disorder Symptom Scale (PDS) was used (Foa, 1995). The PDS, part 1, has a 17-item symptom severity scale corresponding to DSM-IV criteria for PTSD symptoms and generates three subscales: intrusion, avoidance and hyperarousal. PTSD scoring criteria require at least one intrusion-re-experience symptom, three avoidance symptoms and two hyperarousal symptoms. The number of symptoms, rating of symptom severity, and a rating of the level of impairment of functioning were endorsed. Higher scores highlight the more severe symptoms, with a possible score range from 0 to 51 (Foa, 1995).

The traumatic event in this study was determined as the bomb attack that the person was exposed to. At point1 of the questionnaire, participants were asked to focus on their experience of the bombing as well as to specify how long ago the bombing occurred, and if the bombing caused them to feel a sense of fear, helplessness, or horror. At point 2, participants were asked to report 17 posttraumatic symptoms (intrusion 5 items, avoidance 7 items and hyperarousal 5 items). Participants were also asked, at point 3, to report how long ago the identified symptoms began. The participants were also asked to report symptoms and social dysfunction that they experienced over the month prior to the participation in this study .

To assess past life threatening events, the second part of the PDS was used. PDS part 2 is a list of previous stressful and dangerous events (e.g. serious accident, natural disaster) that participants may have experienced in their lives. Participants, at point 1, were asked if they had ever experienced any of the 17 listed events. Follow-up questions were then posed to identify any other dangerous events. If a participant indicated that there is other stressful event, they were asked to specify it. At time point 2, participants were asked to identify the most distressing event of those

identified on the PDS as well as how long ago the life threatening event/s occurred and if the event/s caused them to feel a sense of fear, helplessness or horror . At time point 3, participants were asked to assess the 17 PTSD symptoms. Participants were also asked to indicate the interference of the symptoms with the individual's functioning in 9 areas such as work and relationships with family (see appendix 4).

The PDS part 2 was completed by the bombing group and the control group alike as a way of gathering information on the range of potentially traumatic events they had experienced. Participants were asked to report the event that bothers them the most. If participants had experienced more than one event, they were asked to mark the most dangerous event and accordingly the questions should be answered.

The PDS has sound psychometric properties. The scale has shown good concurrent validity (.81) and significant correlations with the Impact of Event Scale's intrusions and avoidance sub-scales (Foa, Cashman, Jaycox, & Perry, 1997). Scores on the PDS and its subscales were also positively correlated with the Profile of Mood States (POMS) depression and anxiety subscales and negatively correlated with the POMS vigor subscale (r=-.29 to-.39) (Norris & Aroian, 2008).

This questionnaire was used and validated among a sample of Iraqis and showed reliability and validity. Reliability was supported by Cronbach's alpha for the Arabic version (.93) and its subscales (.77-.91) (Norris & Aroian, 2008).

The DSM-IV has specified the diagnoses of PTSD into Full PTSD and No PTSD. In this study however, Full PTSD, Partial PTSD and No PTSD will be used. Although Partial PTSD is not specified in DSM-IV, the rationale for using such a diagnosis is based on existing literature suggesting that it is not always helpful to view PTSD in terms of a binary split (Marshall, Spitzer, & Liebowitz, 1999). The literature also suggests that PTSD could be better conceptualised as a spectrum disorder, which may occur along a continuous dimension from normal to extreme or abnormal stress responses (Shalev, Schreiber, Galai, & Melmed, 1993). Furthermore, it has also

been proposed that some people who are exposed to trauma or a dangerous event may not fulfill diagnostic criteria for PTSD but still experience impairment in functioning, thus require more or less of a level of intervention and care to those who developed full PTSD symptoms (Carlier & Gersons, 1995). For the forgoing reasons, PTSD reactions were classified into full, partial and no PTSD by some researchers (see Amer, Hovey, Fox, & Rezcallah, 2008; Ginzburg et al., 2002; O'Reilly, Grubb, & O'Carroll, 2004). In this study, partial PTSD covers people who developed probable PTSD and met at least one out of the three required symptom groups (Criteria B, C and D) (e.g. they met diagnostic criteria for intrusion symptoms but not avoidance and/or hyperarousal symptoms) with a duration of ≥1 month (Criterion E).

2. General Psychiatric Co-morbidity

The General Health Questionnaire (GHQ-28) was used to assess the general psychiatric symptomatology of the subjects (Goldberg & Hillier, 1979). It has 28-items which are used to screen for latent non-psychotic mental disorders. In other words, it is a screening tool to detect those likely to have or to be at risk of developing psychiatric disorders (Goldberg, 1981). It includes somatic problems (e.g. Have you recently felt that you are ill?), anxiety (e.g. Have you recently found everything getting on top of you?), social dysfunction (e.g. Have you recently been managing to keep yourself busy and occupied?) and depression (e.g. Have you recently found yourself wishing you were dead and away from it all?). GHQ-28 scores range from 0 to 84 and each item is scored from 0-3 (see appendix 5).

The GHQ-28 has been validated in other studies and scored α=.91 (Dowell, 2006). It has been translated and validated in Arabic culture, but not in Iraq, and has shown reliability and validity (Thabet & Vostanis, 2005). The internal consistency of the scale calculated using Cronbach's alpha, was .91 and split half was .88.

4.3 Procedure

4.3.1 Translation of the questionnaires

Translation of the questionnaires was carried out. The questionnaires which had already been translated into the Arabic language and used in Arabic culture e.g. MMSE (Al-Rajeh, Ogunniyi, Awada, Daif, & Zaidan, 1999) and GHQ-28 (Thabet & Vostanis, 2005) were used in this study, whereas questionnaires which had not been translated into Arabic before (e.g. PDS, RSQ-30, IASC, CSS and WAS) were translated by the researcher and a professional interpreter. Back translation was conducted by two other interpreters whose first language was Arabic and who are also professionals in English. Both translators had lived in English speaking countries for several years and worked as professional interpreters. All items were then discussed, with more emphasis on items where discrepancies were noted, until a uniform interpretation or an example of a difficult word or question was agreed upon (or both).

In order to make sure that all the questionnaires were clear and understandable for the participants, a preliminary study was conducted. Twenty five participants (m=13, f=12) from the bombing group and 10 (m=5, f=5) from the control group were chosen randomly to take place in this study. Their answers and comments were analysed in order to check the clarity of the items. This initial study helped the researcher to make some necessary changes in terms of the instructions and gave a substantial impression that all the questionnaires were clear.

4.3.2 Assessments

4.3.2.1 First assessment (T1)

Following their consent, a preliminary interview with the eligible participants was conducted to explain the aims of the study, assist with any questions they might have, and answer any questions they might wish to ask. Participants were notified

that they had a right to withdraw from the study at any stage and for any data collected up to that point to be destroyed should they so wish. They were reassured that withdrawing does not in any way constitute any negative consequences and will be fully and readily accepted by the researcher.

All the 180 participants were provided with a written informed consent letter before participating. This letter was followed by a survey package which asked for some demographic characteristics such as age, gender, marital status, ethnicity, current employment status, education level, and if they suffer from any major life illness including mental illness.

In this interview, participant's cognitive impairment was also assessed using the MMSE. It was necessary to assess cognitive abilities in order to rule out the possibility that they might be responsible for any differences uncovered on the variables examined. A cut-off of >24 was employed and this did not result in any participant being excluded. Therefore, the entire 180 individuals were eligible to participate in the study.

A convenient mutual time table was prepared to meet the participants according to their desire and availability. Participants were invited again to complete the questionnaires comprising this study including information on their perception of threat from the bombing attack, PDS, GHQ-28, RSQ-30, CSS, IASC and WAS. Questionnaire packets were administered individually and completed in private halls belong to the MoH and Al-Anbar University/Iraq. The participants were assessed at least 1 month post-bombing (T1), in accordance with the diagnostic criteria of PTSD based on DSM-IV, and approximately five months following the initial assessment (T2). Participants were offered 10,000 Iraqi Dinar (£4) in appreciation of their time and effort and were also informed that they would be invited again later to complete the second assessment.

4.3.2.2 Follow up assessment (T2)

During the first data collection, participants were requested to provide contact details e.g. telephone number, e-mail address and other contact information. During the one week period of the second assessment, approximately five months after the first assessment, 154 calls were made by the researcher and the administration staff, of which 113 were answered by participants themselves. The others were either not answered, disconnected, had bad connections, or were answered by another person. So, they were contacted via email. Participants were asked if they still wished to carry on with the follow up of the study and surprisingly none of them dropped out, which may have been due to their curiosity to know more about their experience.

The second assessment involved almost the same procedures to the first apart from the participants being asked if they had experienced a further bombing attack since the first assessment. If so, they were asked to specify how many. Then, participants were asked to answer the questionnaires package for the second assessment- PDS, GHQ-28 and RSQ-30. Four participants had been exposed to further bombing attacks.

4.3.2.3 Assessment of the control group

After recruiting the participants of the control group from the MoH, participants were invited by the researcher to take part in this study. Participants were asked to meet the researcher in a hall belonging to the MoH and were divided into groups by the researcher and given information about what the study entails. Thereafter, participants provided written informed consent before participating.

In line with the study's aims, the cognitive functioning of the participants was assessed using MMSE with an exclusion criteria set at >24 cut-off. This resulted in no-one being excluded. Participants were invited again in groups, at a mutually convenient time for the researcher and the participants, to complete the

questionnaires of the study (PDS-second part, GHQ-28, RSQ-30, IASC and WAS). Each group contained approximately 20-34 person (m=27). Participants were also offered 10,000 Iraqi Dinar (£4) in appreciation of their time and effort.

4.3.3 Reliability of the questionnaires

Due to the fact that most of the questionnaires in this study had not been used in the Arabic culture (Iraq) before, the psychometric properties for the questionnaires (e.g. reliability) needed to be covered. Cronbach's αs showed that all the questionnaires have sound psychometric properties (see Table 4.1).

Table 4.1 Cronbach's *α* for the subscales and total score

Subscale	*Cronbach's Alpha α n= 180*
Outcome measures	
PDS- Intrusion	.78
PDS- Avoidance	.74
PDS- Hyperarousal	.79
PDS Total Score	**.84**
GHQ-28 Somatic	.79
GHQ-28 Anxiety	.77
GHQ-28 Social Dysfunction	.72
GHQ-28 Depression	.82
GHQ-28 Total Score	**.90**
Predictor measures	
PDS past life-threatening event- Intrusion	.81
PDS past life-threatening event- Avoidance	.77
PDS Past life-threatening event- Hyperarousal	.70
PDS Past life-threatening event Total Score	**.82**
RSQ- Insecure	.79
RSQ- Secure	.70
RSQ Total Score	**.71**
CSS Total Score	**.91**
IASC- Affect Dysregumation (AD)	.83
IASC- Identity Impairment (II)	. 80

(Continued on next page)

IASC- Idealization Disillusionment (ID)	.66
IASC- Abandonment Concerns (AC)	.76
IASC- Susceptibility to Influence (SI)	.79
IASC- Interpersonal Conflict (IC)	.90
IASC- Tension Reduction Activities (TRA)	.73
IASC Total Score	**.94**
SWA- Controllability of Events (CE)	.70
SWA- Comprehensibility and Predictability of People (CPP)	.80
SWA-Trustworthiness and Goodness of People (TGP)	.79
SWA- Safety and Vulnerability (SV)	.86
SWA Total Score	**.92**

4.4 Data analysis plan

Following extensive data checking, univariate and bivariate analyses, SPSS 19 was used to analyze the data of this study. Prior to analysis, the data were examined for assumptions of multivariate analysis. Analysis of skewness for the measures at T1 revealed that scores on the measures were more or less normally distributed. Then, descriptive statistics and inferential statistics employing Chi-square, paired samples *t*-tests, Spearman's correlation and Hierarchical multiple regressions were performed.

- Demographic characteristics of the participants, the means and standard deviations of the outcome and predictor factors were summarized using descriptive statistics. Descriptive statistics were also used to describe the bombing experience variables and the distribution of attachment patterns.
- *t*-test and chi-square were carried out to compare the differences between the bombing and control group in terms of demographic characteristics, past life-threatening events, co-morbidity, attachment styles, religious coping, coping strategies death anxiety and meaning in life.

- Paired samples *t*-tests were performed comparing rates of trajectory of PTSD, psychiatric co-morbidity and attachment patterns over time.
- The parametric Spearman's correlations were used to establish the association between the predictor variables and the outcome (the post-bombing disorder and psychiatric co-morbidity). Statistical significance was set at $p<.05$.
- Hierarchical multiple regression analyses were performed to compare variables and to explore the inter relationship between different constructs with different indicators.
- A symptotic and resampling strategies were used to analyse the mediational relationships between PTSD symptoms, psychiatric co-morbidity, attachments patterns, trauma exposure characteristics, crises social support post bombing and shattering of world assumptions. These strategies, recommended by Preacher and Hayes (2008), produce bootstrap confidence intervals. Bootstrap is a nonparametric resampling method aiming to test mediation which does not assume normality of the sampling distribution (Preacher & Hayes, 2008).

4.5 RESULTS

This section starts with a description of the participants' demographic variables, followed by incidence of post-bombing PTSD, its trajectory over time, the past life-threatening event, psychiatric co-morbidity and its trajectory, attachment patterns, its distribution and trajectory, predictors of post-bombing PTSD and psychiatric co-morbidity, and finally the variables that mediate the effect between predictors and outcomes.

4.5.1 Characteristics of the bombing participants and control group

The demographic information of the participants in both the bombing group (T1 and T2) and the control group who completed standardized measures of this study are displayed in table 4.2.

The participants of this research investigation were people who had been exposed for the first time to a bombing attack. A total of 180 Iraqi civilians with an equal number of males and females participated in this study. The average age was about thirty years ranging from 18 to 53. Just over half were married, around 41% single, a very small proportion widowed and only one divorced. The income of just over two thirds of the participants was low; just over a third was medium, and a very small percentage was high. Occupations included building labourers (6%), factory workers (7%), cleaners (4%), social servants (8%), self-employed (16%), students (6%), educators (7%), shop assistants (5%), mechanics (6%), nurses (2%), salesmen (3%), engineers (3%) and company directors (2%). Otherwise, 7% were housewives and 12 % unemployed.

In terms of educational level, more than a third had received education up to secondary school level and less than a quarter had obtained education up to primary. The rest, less than half, attended universities and obtained undergraduate and postgraduate qualifications.

The participants were chosen from different regions (Baghdad 97, 53.9%; Anbar 62, 34.4%; Mosul 13, 7.2% and Babil 8, 4.4%). The majority were Arab and a very small proportion Kurdish. All the participants identified themselves as Muslims.

Almost two thirds had not had any major life illness before the bombing. Of the rest, 31, 7 and 2 percent had 1, 2 and 3 other major life illnesses respectively. The illnesses included asthma (5%) and a small proportion (2-3%) had back problems, menstrual problems, high blood pressure, heart problems, diabetes and eczema. Only five percent had had ear, nose and throat disorders. The same proportion of participants (5%) had had skin disorders. However, the most prevalent illnesses were digestive disorders (8%). These details were confirmed in medical records.

The control group comprised 178 people from the general public. The sample was distributed almost equally between males and females with just less than half males and just over half females. The majority of the participants (53%) were married and less than half (43%) single. The remainder were divorced with two participants being widowed. Almost one quarter had received education up to primary school level and less than a half had obtained education up to secondary. The rest had attended universities and obtained undergraduate and postgraduate qualifications. The income level of over a third was in the low income category, in which 6% were unemployed, 8% self-employed, 3% taxi drivers and 5% housewives. Less than half were in the medium category, and occupations included educators (12%), salesmen (14%), factory workers (7%), students (9%) and nurses (10%). Otherwise, the rest were in the high income category and included engineers (5%) and university lecturers (5%). All the participants identified themselves as Muslims.

In terms of medical status, the majority of the participants (82%) did not have any major life illness prior to the assessment. Of the rest, 12 and 5% had 1 and 2 major life illnesses respectively. Allergy (5%) was the most pervasive illness. Other illnesses included arthritis (3%), back problems (2%) and digestive disorders (4%).

Compared with the bombing group, the control group showed no significant differences in terms of age [*t* (356) =-.80, *ns*], gender [χ^2 (1) =.04*, ns*], marital status [χ^2 (1) =.01*, ns*], educational level [χ^2 (1) =6.11*, ns*] and ethnicity [χ^2 (1) =.94*, ns*]. However, there were significant income differences (χ^2 (1) =20.65, p< .001) and major life illness (χ^2 (1) =22.98, p< .001) between the two groups. The control group showed no significant cognitive functioning difference than the bombing group [*t* (356) =-1.60, *ns*]. People had experienced bombing reported no more significant traumatic events during their life time than the control group [*t* (64) =1.73, *ns*].

Table 4.2 Demographic details of the bombing group and people without bombing experience

	Bombing Group		**Control Group**			
	Mean	**SD**	**Mean**	**SD**	χ^2	***t***
Age	29.94	8.86	30.70	8.97	-----	-.80
Cognitive function	26.23	1.41	26.45	1.37	-----	-1.50
Past life-threatening event	1.43	.61	1.16	.38	-----	1.73
Onset of bombing (month)	1.31	.48	-----	-----	-----	-----
Gender	**N**	**%**	**N**	**%**		
M	90	50	87	48.9	.04	-----
F	90	50	91	51.1		
Marital status						
Single	75	41.7	78	43.8		
Married	97	53.9	95	53.4	.01	-----
Divorced	1	.6	3	1.7		
Widowed	7	3.9	2	1.1		
Income						
Low income	113	62.8	69	38.8		
Medium income	56	31.1	83	46.6	20.65**	-----
High income	11	6.1	26	14.6		
Education Level						
Primary	36	20.0	44	24.7		
Secondary	70	38.9	83	46.6	6.11	-----
University	74	41.1	51	28.7		
Ethnicity						
Arab	159	88.3	151	84.8	.94	-----
Kurdish	21	11.7	27	15.2		
Major life illness	**YES**	**NO**	**YES**	**NO**		
	N %	N %	N %	N %		
	74 41.1	106 58.9	32 17.8	146 82.2	22.98**	-----

Note: For the present and further analysis, dummy variables were coded as follows:- Gender: 1=male, 2=female; marital status: 1=single/divorced/widowed, 2=married; income: 1=low income, 2= mid income/high income; educational level: 1=university, 2= primary/secondary; ethnicity: 1= Arab, 2=Kurdish; major life illness: 1= yes, 0= no.
*$p < .05$, **$p < .001$

4.5.2 Initial bombing responses

Risk factors of perceived life threat after bombing were also assessed. Table 4.3 shows the initial responses of the participants before, during and after the subjective bombing experience. Prior to the bombing, more than half of the population did not anticipate that they would be involved in a bombing one day, but over two thirds of them knew of someone who had died or sustained an injury in a bombing.

Table 4.3 Bombing experience variables

Before the bombing	**YES**		**NO**	
	N	**%**	**N**	**%**
Did you anticipate that you would be involved in a bombing attack one day?	77	42.8	103	57.2
Did you know anyone who died or sustained an injury in a bombing attack?	125	69.4	55	30.6
During the bombing				
Were you with anyone you know when the bomb exploded?	93	51.7	87	48.3
Did anyone you know die in the bombing?	45	25.0	135	75.0
Did anyone you know sustain an injury during the bombing?	64	35.6	116	64.4
Were you injured during the attack?	130	72.2	50	27.8
Were you covered with dark and dusty smoke from the bombing?	121	67.2	59	32.8
Were you unconscious during the attack?	41	22.8	139	77.2
Did you feel that you were going to die during the attack?	133	73.9	47	26.1
Did you see people exploded into pieces?	59	32.8	121	67.2
Did you see body remains?	100	55.6	80	44.4
Did you see people severely injured?	128	71.1	52	28.9
	Mean		**SD**	
Was the injury painful?	1.96		.86	
Did you feel confused?	2.08		.82	

(Continued on next page)

Did you feel you lost control of yourself?	1.99		.88	
Did you feel isolated and alone during the attack?	1.83		.91	
Were you horrified by what you saw during the attack?	2.32		.81	
	YES		**NO**	
After the bombing	**N**	**%**	**N**	**%**
Did you try to rescue other victims after the bombing?	16	8.9	164	91.1
Were you taken to a hospital?	131	72.8	49	27.2
Did you leave the site of bombing without seeking medical care?	45	25.0	135	75.0
	Mean		**SD**	
Are you angry about what happened to you?	2.45		.75	
Are you worried that you might experience another bombing?	1.96		.78	
Do you think your life is in danger?	1.97		.81	
Do you deliberately stay at home and avoid going out in case you experience another bombing?	1.55		.99	
Do you feel that the bombing attack have changed you as a person?	1.82		.88	

Such incidents often leave behind a considerable number of victims and frightening scenes. Twenty percent of the participants reported that they know someone (for instance family members, spouse, relatives, friends and neighbors) who had died and more than a quarter knew someone who had sustained an injury during the bombing. Regarding the severity of the scenes, more than one third of the participants saw people exploding into pieces, more than half saw body remains of other victims and people severely injured.

Additionally, more than three quarters of the participants themselves were injured and thought they were going to die. Pain and severity of injuries varied. Whereas the majority of the injuries were on hands, including amputations (just over 11%), only 3 people had injuries in eyes (see Table 4.4). Subsequently, they were

evacuated and taken to hospital for medical treatment. On average, the injuries were reported as moderately painful.

Table 4.4 Number of people who got injured during the bombing

	N	%
Abdomen	9	5.0
Legs, including amputation	14	7.8
Hands, including amputation	20	11.1
Head	19	10.6
Thighs	19	10.6
Below the knee	18	10.0
Back	10	5.6
Shoulders	10	5.6
Slight injury of the face	8	4.4
Injury of the eyes	3	1.7

The experience of being in a bombing was described by over two thirds of the participants as overwhelmingly frightening and distressing. For example, they described their memories in graphic detail, such as being in the dark, choking on smoke and dust. They were moderately disoriented, confused, lost control of themselves and felt isolated and alone. The majority remained conscious and so were able to remember the experience.

Although the majority of the participants were with someone (family members, friends, relatives, spouse) when the bombing occurred, the majority (91.1%) were deeply preoccupied with running away and did not try to rescue or help other victims.

In referring to the consequences of the attack, many concluded that life is dangerous and that they might experience another bombing attack in the future. Consequently, some had decided to deliberately stay at home and avoid going out in case they experience another bombing. Participants also described that the bombing attack had changed their personality and they are severely angry about what happened to them.

Participants experienced life threat after the bombing at different intensities. For the present and subsequent analysis, an initial severity score was used to classify the severity of the bombing as low, moderate and severe exposure on the basis of the severity of subjective experiences. This procedure is in line with literature (Chung, Werrett, Easthope, & Farmer, 2004; Handley et al., 2009a; Verger et al., 2004).

Perceived threat was coded as low for subjects who answered "no" to all the following questions:

-Did you know anyone (e.g. family member, spouse, close friend or neighbour) who died and/or sustained an injury?

-Did you feel that you were going to die?

-Did you see people explode into pieces?

-Did you see body remains?

-Did you see people severely injured?

-Were you injured?

Perceived life threat was coded as moderate for participants who answered "yes" to at least two of the three questions:

-Did you know anyone (e.g. family member, spouse, close friend or neighbour) who died and/or sustained an injury?

-Did you feel that you were going to die?

-Were you injured (Handley et al., 2009a; Verger et al., 2004)?

Perceived threat was also coded as moderate for participants who did not:

- See people explode into pieces.

- See not see body remains.

- See people severely injured.

The perceived threat of the bombing experience was coded as severe for participants who answered "yes" to all the following questions:

-Did you know anyone (e.g. family member, spouse, close friend or neighbour) who died and/or sustained an injury?

-Did you feel that you were going to die?

-Did you see people explode into pieces?

-Did you see body remains?

-Did you see people severely injured?

-Were you injured?

The low and moderate perceived life threat group consisted of 24% (n=43) and 62% (n=111) respectively, whereas those who were coded as severe exposure consisted of 14% (n= 26).

4.5.3 Incidence of post-bombing PTSD

In terms of PTSD screening, table 4.5 shows that at time 1, over three quarters of the participants met the criteria for current probable PTSD with full and partial PTSD, in which over half developed full PTSD and less than quarter met the screening criteria for partial PTSD. The rest, however, did not meet the screening criteria for PTSD. In this research, this outcome will be referred to as current probable PTSD to acknowledge that symptoms determined through the use of a screening instrument do not necessarily indicate whether an individual meets diagnostic criteria (North & Pfefferbaum, 2002).

In relation to reporting of symptoms, just over half (51%) appeared to be employing avoidant strategies the most in that they indicated that they were trying not to think and talk about the incident, and nearly one third (27%) were avoiding activities, people or places that reminded them of the bombing. Furthermore, less than 10% felt that their positive hopes or future plans would now ever come true and they consequently became less interested in important activities.

The next most frequently reported symptoms was intrusive thoughts in that over one third (31%) had strong feelings about the bombing, with thirty seven percent having had bad dreams, 18% often having waves of strong feeling about the bombing and finding that any reminders could bring back feelings about it. However, most of the participants (86%) often did not have, or rarely had, physical reactions.

Participants displayed hyperarousal as the next most reported symptoms in that 47% found themselves having fits of anger and almost one third had trouble falling or staying asleep (28%) and being overly alert (25%) (see Table 4.5).

Results showed that no PTSD cases with symptoms beginning more than 6 months after the bombing were detected, demonstrating, per DSM-IV-TR definition, no delayed-onset PTSD. On average, the onset of participants' exposure to the bombing was just over 1 month (range: 1-3, SD=.48).

At the second assessment, four participants endorsed having one more bombing attack experience. None of them developed PTSD symptoms at time 1. The follow up assessment also showed that over two thirds of the participants met the screening criteria of PTSD, in which less than a quarter developed partial PTSD and 42% developed full PTSD. Otherwise, over one third had no PTSD symptoms.

On the symptoms level, participants reported high scores in avoidance symptoms, followed by intrusion thoughts, with the lowest scores in hyperarousal symptoms (see Table 4.5).

Table 4.5 Screening criteria of post-bombing PTSD and mean scores over time

	Intrusion		Avoidance		Hyperarousal		NO PTSD		Partial PTSD		Full PTSD	
	Mean	**SD**	**Mean**	**SD**	**Mean**	**SD**	**N**	**%**	**N**	**%**	**N**	**%**
T1 (180)	8.87	3.43	11.72	3.50	8.62	3.12	42	23.4	35	19.4	103	57.2
T2 (180)	6.50	3.45	8.92	3.60	6.18	2.92	59	32.8	44	24.4	77	42.8

$^{**}p < .001$, $^{*}p < .05$

4.5.4 Trajectory of post-bombing PTSD from T1 to T2

With regard to the time course of post-bombing PTSD and symptoms over time, table 4.6 shows that of the 42 participants who were screened with no PTSD at the first time assessment, just over three quarters remained in the same category. However, less than 10% changed to partial PTSD and less than a quarter to full PTSD at time 2. Of the 35 participants who developed partial PTSD at time 1, the majority changed to no PTSD. Nevertheless, less than a quarter remained in the same category and nearly one sixth changed to full PTSD symptoms. Finally, of the 103 participants who had full PTSD symptoms at time 1, over two thirds remained in the same category of criteria screening of PTSD and over one third changed to the partial. The remainder, less than one fifth changed to the category of no PTSD.

Table 4.6 Trajectory of PTSD symptoms over time

PTSD T1 (180)							PTSD T2 (180)					
NO PTSD		Partial PTSD		Full PTSD			NO PTSD		Partial PTSD		Full PTSD	
N	%	N	%	N	%		N	%	N	%	N	%
42	23.4	35	19.4	103	57.2	No PTSD (n=42)	30	16.6	3	1.6	9	5
						Partial (n=35)	25	13.8	8	4.4	2	1.1
						Full PTSD (n=103)	4	2.2	33	18.3	66	36.6

The results showed that there was a significant decline of post-bombing PTSD symptoms from T1 to T2 in terms of the number of participants meeting the PTSD screening criteria and the total severity of PTSD. More precisely, *t* test showed that there was a significant decline or lessening in the three symptoms over time: avoidance [*t* (179) =10.67, *p*<.001, *r*=.62], intrusion [*t* (179) =10.19, *p*<.001, *r*=.60] and hyperarousal [*t* (179) =9.94, *p*<.001, *r*=.60].

Participants were found to experience lowest scores of hyperarousal symptoms at T1 and T2 alike. However, avoidance symptoms have had the highest scores, followed by the intrusion thoughts (see Table 4.5).

4.5.5 The prevalence of past life-threatening events

PTSD symptoms relating to life-threatening events were tabulated separately from those associated with the bombing experience. At T1, 26.7% (n=48) of the sample reported having experienced at least one previous dangerous lifetime event. More specifically, the majority, 16.7% (n=30) identified a single event, 8.3% (n=15) identified two, and the remaining 1.7% (n=3) endorsed 3 or more events of this nature.

The most common of these events was the sudden and unexpected loss of a loved one. Other commonly endorsed events included an adult physical assault experience, followed by serious accident. Other stressors endorsed at relatively high rates included a loved one's life threatening experience (i.e. accident; adult physical assault). Other dangers including life-threatening illness, sudden death, and imprisonment were all just less than 3%. Participants reported less than 2% of other stressful events not specifically mentioned in the PDS (see Table 4.7).

The life-threatening events of T2 were excluded from the present analysis for the reason that all the participants reported having not experienced further

dangerous events apart from 2 (1%) who reported having experienced one more dangerous event between the T1 and T2 assessments.

Turning to the control group, the majority of the participants (89.9%, n=160) reported that they had not experienced a past life-threatening event. Of the rest, 8.4% (n=15) identified that they had been exposed to potential traumatic events only once during their lives, whereas 1.7% (n=3) of participants had been exposed to dangerous events twice. As in the bombing group, the most commonly endorsed of these events was the sudden and unexpected loss of a loved one, followed by a life threatening, serious accident, and sudden, violent death (see Table 4.7).

Table 4.7 Past life-threatening events for both bombing and control group

Past life-threatening event	T1				Control group			
	YES		**NO**		**YES**		**NO**	
	N	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Serious accident	7	3.9	173	96.1	3	1.7	175	98.3
Natural disaster	1	.6	179	99.4	-----	-----	-----	-----
Adult physical assault	10	5.6	170	94.4	-----	-----	-----	-----
Child physical assault	-----	-----	-----	-----	-----	-----	-----	-----
Adult sexual assault	-----	-----	-----	-----	-----	-----	-----	-----
Child sexual assault	-----	-----	-----	-----	-----	-----	-----	-----
Combat	3	1.7	177	98.3	-----	-----	-----	-----
Imprisonment	5	2.8	175	97.2	-----	-----	-----	-----
Torture	3	1.7	177	98.3	-----	-----	-----	-----
Captivity	-----	-----	-----	-----	-----	-----	-----	-----
Life-threatening illnesses	5	2.8	175	97.2	4	2.2	174	97.8
Sudden, violent death	5	2.8	175	97.2	2	1.1	176	98.9
Sudden, unexpected death	27	15	153	85	9	5.1	169	94.9
Serious injury	-----	-----	180	100	-----	-----	-----	-----
Exposure to toxic	-----	-----	180	100	-----	-----	-----	-----
Other traumatic	3	1.7	177	98.3	3	1.7	175	98.3
Terrorist attack	3	1.7	-------	------	-----	-----	-----	-----

-----Refers that traumatic life had not been identified

Compared with the control group, the bombing group had significantly higher scores in all of the PTSD symptoms. More specifically, the bombing group were significantly higher in intrusion symptoms [*t* (64) =4.26, *p*<.001, *r*=.46], avoidance [*t* (64) =5.61, *p*<.001, *r*=.57] and hyperarousal [*t* (64) =4.44, *p*<.001, *r*=.48] than the control group. On the symptoms level, participants of the bombing and control group reported the avoidance style symptom the most, followed by intrusive thoughts and hyperarousal (see Table 4.8).

Table 4.8 The mean scores of past life-threatening PTSD symptoms for the bombing and control group

	Bombing group n=48		Control group n=18	
	Mean	**SD**	**Mean**	**SD**
Intrusion	6.47	3.68	2.55	2.03
Avoidance	8.60	3.60	3.50	2.17
Hyperarousal	5.66	3.02	2.33	1.53

$^{**}p < .001$, $^{*}p < .05$

4.5.6 What is the psychiatric co-morbidity associated with post-bombing PTSD? A comparison between bombing and control group

Using the GHQ scoring, the results showed that the majority of the participants at T1 92.7% (n=167) who completed the GHQ-28 scored at or above the cut-off point of 4, thus fulfilling the criteria for psychiatric caseness. Participants reported more anxiety symptoms followed by social dysfunction and somatic problems, but scored lowest in depression symptom (see Table 4.9).

Using the odds ratio calculation, results indicated that this figure dropped to 86.1% (n=155) out of the 180 participants who completed the GHQ-28 at T2. On the symptoms level, paired *t*-tests were carried out to compare differences over time.

The results showed that the decline was significant in terms of meeting the GHQ-28 cut-off over time; somatic [*t* (179) =12.03, p<.001, *r*=.67], anxiety [*t* (179)=11.21, p<.001, *r*=.64], social dysfunction [*t* (179) =12.94, p<.001, *r*=.69] and depression symptoms [*t* (179) =9.09, p<.001, *r*=.56] (see Table 4.9).

Regarding the control group, results indicated that only 7.8% (n=14) out of 178 scored at or above the cut-off point of 4. The most frequent symptom scored by the participants was somatic problems, followed by social dysfunction and anxiety. Similar to the bombing group, the control group scored lowest on depression.

Table 4.9 The mean scores of the GHQ-28 for the bombing and control group

	Bombing group		Bombing group		Control group	
	T1		T2			
	Mean	**SD**	**Mean**	**SD**	**Mean**	**SD**
Somatic problems	12.31	4.52	8.81	3.73	4.70	1.92
Anxiety	13.07	3.54	10.11	3.18	2.43	1.88
Social dysfunction	12.56	3.86	8.76	3.33	2.88	2.00
Depression	11.29	4.92	8.33	3.85	1.41	1.78

$^{**}p < .001$, $^{*}p < .05$

The bombing group had significantly higher scores than the control in all of the symptoms and total scores at T1. In particular, *t* test showed that participants in the bombing group were significantly higher in somatic problems [*t* (356) =20.67, *p*<.001, *r*=.74], anxiety [*t* (356) =35.40, *p*<.001, *r*=.88], social dysfunction [*t* (356) =29.71, *p*<.001, *r*=.84] and depression [*t* (356) =25.19, *p*<.001, *r*=.80] than the control group.

Compared with the control group at T2, the bombing group showed that they were still significantly suffering more somatic problems [*t* (356) =13.09, *p*<.001, *r*=.57], anxiety [*t* (356) =27.82, *p*<.001, *r*=.83], social dysfunction [*t* (356) =20.22, *p*<.001, *r*=.73] and depression [*t* (356) =21.81, *p*<.001, *r*=.75] than the control group,

indicating that the likelihood of being diagnosed as suffering from a general psychiatric disorder had increased substantially more for the people who had been exposed to a bombing attack than people who did not. In other words this meant that the bombing people were thought to be psychiatric cases.

Because the participants were chosen from different regions, the question was whether the region makes a difference to the psychological well-being. In other words, do the citizens of Baghdad have more severe PTSD and psychiatric co-morbidity than those from other regions? A *t*-test showed that there are no significant differences between the population of Baghdad and that of other Iraqi cities outside Baghdad in terms of PTSD [*t* (178) =.25, *ns*] and psychiatric co-morbidity [*t* (178) =.71, *ns*].

4.5.7 How are the attachment patterns distributed among the sample?

There were individual differences in the way that the participants appraised the accessibility of the attachment figure and how they regulated their attachment patterns after their experience of the bombing. Table 4.10 displayed the distribution of the attachment categories among the participants at T1 and T2. It shows that more than one third of the participants exhibited the fearful pattern and less than one tenth classified themselves as preoccupied. Less than one third of the participants showed the dismissing patterns and almost the same ratio was found to be secure and more satisfied in their close relationships with others at T1. Fearful attachment was reported as the most high category score, then secure, followed by dismissing and finally, preoccupied.

At the follow up assessment, the results showed that over one third reported the fearful and secure state category, more than one fifth preoccupied and less than one third exhibited their attachments patterns with others as dismissive.

People who were not exposed to bombing, however, reported that just less than 40% adopted the secure attachment, less than one quarter, fearful and

dismissing styles. The lowest score that has been found among the control group is the preoccupied, at just less than 13%. Among the control group, participants scored most highly on attachment patterns of secure, followed by fearful and dismissing. The lowest score was exhibiting the preoccupied attachment (see Table 4.10).

Table 4.10 Distribution of attachment styles for the bombing and control group

Attachment Patterns	Bombing group				Control group	
	T1		T2			
	N	**%**	**N**	**%**	**N**	**%**
Secure	53	29.4	62	34.4	71	39.9
Fearful	61	33.9	56	31.1	43	24.2
Preoccupied	17	9.4	10	5.6	23	12.9
Dismissing	49	27.2	52	28.9	41	23.0

4.5.8 Changes in attachment security between T1 and T2

A central question for this research is the extent to which attachment insecurity alters over time and what facilitates these changes. The data was examined to explore changes in the patterns of secure and insecure attachment styles across the two time points of the bombing group and also to make comparisons with the control group. Table 4.11 shows the trajectory of attachment patterns. Of the 53 who were found to be secure at time 1, the majority remained in the same category, but very little changed with the fearful and preoccupied pattern and less than a fifth changed to dismissing at time 2.

Of the 61 participants who were rated as fearful at time1, there was an equal proportion of participants who changed to secure and preoccupied attachment styles. However, the majority of participants remained in the same pattern and less than a tenth changed to dismissing.

The 17 participants who exhibited the preoccupied style at time 1 reported an equal proportion in change to dismissing and remained in the same status, whereas less than 1% and just over 1% changed to fearful and secure respectively.

Finally, of the 49 participants who were initially classified under the dismissing state at time 1, only two changed to preoccupied, less than a fifth changed to secure and less than a tenth to the fearful pattern. However, more than a tenth did not show any change.

Table 4.11 Trajectory of attachment styles over time

Attachment styles T1 n=180	Attachment Styles T2 n=180							
	Secure		Fearful		Preoccupied		Dismissing	
	N	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Secure (n=53, 29.4%)	47	26.1	1	.5	0	0	5	2.7
Fearful (n=61, 33.9%)	5	2.7	40	22.2	1	.5	15	8.3
Preoccupied (n=17, 9.4%)	2	1.1	1	.5	7	3.8	7	3.8
Dismissing n= (49, 27.2%)	8	4.4	14	7.7	2	1.1	25	13.8

With regard to the trajectory of the attachment styles from T1 to T2, results suggested that there was an increase in the number of clients who altered towards the secure and dismissing attachment styles, whereas there was a decrease in the number of participants who exhibited the fearful and preoccupied attachment. In particular, the *t* test showed that there was a significant increment over time on secure [*t* (179) =-9.37, *p*<.001, *r*=.57] and dismissing patterns [*t* (179) =-8.14, *p*<.001, *r*=.52], but a significant decline over time was found on fearful [*t* (179) =11.17, *p*<.001, *r*=.64] and preoccupied patterns [*t* (179) =6.69, *p*<.001, *r*=.45].

In terms of the distribution of attachment styles among people who developed probable PTSD symptoms, the results showed that of the 138 people who reported PTSD symptoms at time 1, the vast majority of them (100, 72.4%) exhibited insecure attachment, in which 45 (32.6%) exhibited fearful, 16 (11.5%) preoccupied and 39 (28.2%) dismissive patterns.

4.5.9 How did the bombing group compare with the control in attachment styles?

The comparison between bombing and control group was also examined. Expectedly, the control group were more secure than the bombing, in which nearly forty percent exhibited the secure attachment in their relationship with others (see Table 4.10).

In particular, the bombing group were significantly higher in exhibiting fearful [t (356) =16.49, p<.001, r=.66], preoccupied [t (356) =10.91, p<.001, r=.50] and dismissing attachment [t (356) =13.97, p<.001, r=.59] than the control group at time 1. However, the control group showed significantly higher scores in secure attachment [t (356)=-21.52, p<.001, r=.75] than the bombing group at T1 (see Table 4.12). Participants in the bombing group also exhibited significantly more fearful [t (356) =13.27, p<.001, r=.57], preoccupied [t (356)=7.50, p<.001, r=.37], dismissing [t (356) =21.32, p<.001, r=.75] and less secure attachment [t (356) =-17.03, p<.001, r=.67] than the control group at time 2.

Table 4.12 The mean scores of the attachments styles for the bombing and control

	Bombing group T1		Bombing group T2		Control group	
	Mean	**SD**	**Mean**	**SD**	**Mean**	**SD**
Fearful	13.38	4.30	11.12	3.02	7.26	2.45
Preoccupied	11.48	2.13	10.72	1.99	9.23	1.75
Dismissing	12.71	3.28	13.78	2.26	8.39	2.50
Secure	13.61	2.31	14.84	2.27	19.38	2.73

$^{**}p < .001$, $^{*}p < .05$

4.5.10 How do altered self-capacities compare between bombing and control group?

Looking at the participants' levels of altered or reduced self-capacities after the experience of bombing attack, a comparison between the bombing and control group was carried out. Table 4.13 shows the means and standard deviations of both bombing and control group. Results suggest that the experience of bombing attack led to deterioration of the self. In particular, the comparison showed that people who experienced bombing had significantly higher levels of altered self-capacity than participants who did not.

More precisely, *t* test showed that the bombing group were significantly higher in abandonment concerns [*t* (356) =24.89, p<.001, *r*=.79], susceptibility to influence [*t* (356) =17.28, p<.001, *r*=.67], idealization disillusionment [*t* (356) =23.47, p<.001, *r*=.78], tension reduction activities [*t* (356) =27.13, p<.001, *r*=.82], interpersonal conflict [*t* (356) =23.59, p<.001, *r*=.78], affect dysregulation [*t* (356) =32.07, p<.001, *r*=.86] and identity impairment [*t* (356)=26.50, p<.001, *r*=.80] than the control group.

The greatest impact of the bombing reported by participants appraised was that of affect dysregulation, followed by impairment of identity, conflicts of personal relationships with others and then concerns of being abandoned. Susceptibility to

influence had the lowest scores, followed by idealization disillusionment and tension reduction activities.

On the contrary, the control group had the highest scores on susceptibility, followed by affect dysregulation, idealization disillusionment and identity impairment. Distracting themselves in activities to reduce tension had the lowest scores, followed by struggling in the social relations and worrying about being abandoned (see Table 4.13).

Table 4.13 The mean scores of the altered self-capacities for the bombing and control group

	Bombing group		**Control group**	
	Mean	**SD**	**Mean**	**SD**
AC	25.03	6.26	11.49	3.67
SI	19.16	4.77	13.43	3.28
ID	21.91	5.36	12.66	3.60
TRA	22.08	5.57	10.07	1.98
IC	25.77	7.30	11.12	3.91
AD	30.16	6.30	12.88	3.47
II	26.36	6.63	12.01	2.85

$^{**}p < .001$, $^{*}p < .05$

4.5.11 Shattering of world assumptions: a comparison between the bombing and control groups

With regard to world assumptions, interest was taken to assess the profound effects of the bombing experience on the assumptions of its survivors and compare it with the control group. The mean scores of the shattered world assumptions of both groups is shown in table 4.14. This indicates significant differences between the bombing and non-bombing groups. It shows that the bombing survivors appraised the world as less safe and themselves as vulnerable to danger as the biggest impact of the bombing experience, followed by comprehensibility and predictability of people

and feeling that events in the world cannot be controlled by people's behaviours. Considering people as less trustworthy and less benevolent, however, was the lowest impact.

Table 4.14 The mean scores of the shattering world assumption for both bombing and control group

	Bombing group		**Control group**	
	Mean	**SD**	**Mean**	**SD**
CE	12.11	3.86	22.98	4.00
CPP	13.26	4.57	22.61	4.00
TGP	11.97	3.88	22.62	4.04
SV	15.23	6.16	27.18	4.84

$^{**}p < .001$, $^{*}p < .05$

With regard to the assessment of survivors' assumptions compared with the non-bombing group, findings revealed differences between both groups. More specifically, a *t* test was carried out to inform whether the differences in the mean scores were significant or not and give interpretations of such mean differences. The results indicate that the control group were significantly higher in the ability to control events in their lives [*t* (356) =-26.13, p<.001, *r*=.81], comprehensibility and predictability of people [*t* (356) =-20.57, p<.001, *r*=.74], thinking that people are trustworthy and good [*t* (356) =-16.47, p<.001, *r*=.66] and feeling that the world is safe [*t* (356) =-20.37, p<.001, *r*=.73] than the bombing group.

4.5.12 Involvement of the demographic variables in the outcomes

People with different demographic variables may differ in PTSD and co-morbidity reactions. Therefore, demographic variables (e.g. gender, age, ethnicity, marital status, occupation and educational level) were also considered. In this study, the control for the demographic variables was conducted, which might confound the outcome measures. To have an indication of the relationship between these demographic variables and the severity of PTSD and co-morbidity at T1 and T2, correlation coefficients were computed (see Table 4.15). The results show that none of the demographic variables was significantly correlated with the time 1 PTSD, time 2 PTSD, GHQ T1 and GHQ T2. So, none of the demographic variables were controlled for.

Table 4.15 Correlation between the demographic variables and (T1 and T2) PDS severity and GHQ

Variable/measure	1	2	3	4	5	6	7	8	9
PDS T1	-								
GHQ T1	.73**	-							
PDS T2	.67**	.52**	-						
GHQ T2	.59**	.66**	.71**	-					
Gender	-.09	.02	-.03	.07	-				
Age	-.13	-.01	-.03	.01	.09	-			
Ethnicity	.01	.05	.07	.13	.12	.06	-		
Marital status	-.12	-.02	-.04	-.05	.01	.15*	-.01	-	
Occupation	.07	.10	.05	.08	-.05	.24**	.07	.11	-
Educational Level	.12	.03	.10	-.00	-.04	.08	.04	.02	.50**

** $p < .001$(two-tailed) * $p < .05$ (two tailed)

4.5.13 What is the relationship between predictor variables and outcomes following bombing?

To establish the relationship between severity of bombing attack, life-threatening event, attachment styles, social support, altered self-capacity, shattering of world assumptions and post-bombing PTSD and co-morbidity among survivors, a series of hierarchal multiple linear regression analysis was carried out. But, before presenting the data, table 4.16 shows the correlation between the predictor variables and the severity of PTSD and psychiatric co-morbidity at T1 and T2.

The results demonstrated that there was a significant correlation between the severity of bombing attack and PTSD and psychiatric co-morbidity at both of the two time points. The greater the rating of the severity of the experience, the more severe PTSD and psychiatric co-morbidity were at both times. Time since the bombing was not significantly correlated with PTSD and psychiatric co-morbidity at either time (T1 and T2) (see table 4.16). The results also showed that affect dysregulation had the strongest correlation with both the total scores of PDS and GHQ-28. Some other variables (e.g. trustworthiness and goodness of people, insecure attachment and social support) were strongly correlated with the outcomes, indicating that the scores of these variables were the best indicators of post-bombing PTSD.

Table 4.16 Correlations (*r*) between PTSD, psychiatric co-morbidity and other bombing-related factors

Variable/measure		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	PDS score at T1	-																			
2	GHQ-28 score at T1	.73**	-																		
3	PDS score at T2	.67**	.52**	-																	
4	GHQ-28 score at T2	.59**	.66**	.71**	-																
5	SoB	.27**	.21**	.19**	.17*	-															
6	Time since the bombing	-.06	-.05	-.09	-.12	-.14	-														
7	LTE	.35*	.03	.40**	.16	.06	-.00	-													
8	IA	.47**	.48**	.33**	.32**	.13	.00	-.09	-												
9	SA	-.19**	-.20**	-.21**	-.26**	-.01	.04	-.15	-.34**	-											
10	CSS	-.39**	-.29**	-.41**	-.32**	-.09	-.12	-.09	-.42**	.18*	-										
11	IASC-AC	.36**	.38**	.24**	.28**	.18*	.02	-.24	.44**	-.10	-.16*	-									
12	IASC-SI	.20**	.30**	.17*	.18*	.14*	.06	-.12	.34**	-.04	-.12	.58**	-								
13	IASC-ID	.33**	.36**	.29**	.23**	.16*	-.00	-.21	.41**	-.20**	-.23**	.69**	.52**	-							
14	IASC-TRA	.41**	.39**	.36**	.32**	.21**	-.02	-.07	.51**	-.15*	-.28**	.58**	.51**	.57**	-						
15	IASC-IC	.44**	.44**	.39**	.34**	.23**	-.02	-.06	.52**	-.23**	-.33**	.69**	.52**	.71**	.78**	-					
16	IASC-AD	.53**	.52**	.39**	.36**	.19**	.07	-.05	.61**	-.23**	-.42**	.55**	.45**	.46**	.65**	.68**	-				
17	IASC-II	.44**	.44**	.34**	.35**	.16*	-.05	-.20	.56**	-.24**	-.33**	.72**	.61**	.66**	.63**	.72**	.63**	-			
18	SWA-CE	-.40**	-.41**	-.36**	-.34**	-.15*	.15*	-.11	-.41**	.17*	.23**	-.37**	-.29**	-.34**	-.40**	-.40**	-.37**	-.42**	-		
19	SWA-CPP	-.42**	-.41**	-.33**	-.36**	-.17*	.10	.14	-.55**	.33**	.25**	-.43**	-.29**	-.39**	-.52**	-.48**	-.45**	-.47**	.60**	-	
20	SWA-TGP	-.48**	-.43**	-.35**	-.33**	-.16*	-.03	.17	-.56**	.30**	.26**	-.56**	-.35**	-.50**	-.52**	-.60**	-.56**	-.57**	.59**	.67**	-
21	SWA-SV	-.38**	-.42**	-.37**	-.36**	-.19*	.03	.12	-.56**	.29**	.36**	-.42**	-.30**	-.39**	-.55**	-.50**	-.51**	-.49**	.71**	.79**	.74**

***Note*:** For the present analysis, variables were coded as follows. Severity of bombing: 1=not at all, 2= mild/severe; attachment styles: 1= insecure including fearful/dismissing/preoccupied; 2=secure, (see Muller et al., 2000); **SoB**= Severity of the Bombing; **LTE**= Life-Threatening Event; **IA**= Insecure Attachment, **SA**= Secure Attachment; **CSS**= Crises Social Support; **IASC-AC**= Altered Self-Capacity- Abandonment Concerns; **IASC-SI**= Susceptibility to Influence; **IASC-ID**= Idealization

(Continued on next page)

Disillusionment; **IASC-TRA**= Tension Reduction Activities; **IASC-IC**= Interpersonal Conflict; **IASC-AD**= Affect Dysregulation; **IASC-II**= Identity Impairment; **SWA-CE**= Shattering of World Assumption- Controllability of Events; **SWA-CPP**= Comprehensibility and Predictability of People; **SWA-TGP**= Trustworthiness and Goodness of People; **SWA-SV**= Safety and Vulnerability. $^{**}P < .001$ (two-tailed) $^{*}P < .05$ (two-tailed).

4.5.14 Cross-sectional associations between predictors, PTSD and psychiatric co-morbidity

To assess the unique and cumulative contributions of the independent variables to PDS and GHQ and investigate the relative importance of the predictors and the percentage of variance in the PDS and GHQ total scores, two hierarchical multiple regressions in this analysis were carried out, in which the independent variables were entered in 4 blocks. Given their significant correlation with the severity of PDS and psychiatric co-morbidity at T1, the severity of bombing attack score was entered into block 1 of the regression with the life-threatening event into block 2. It was also tested whether there was an interaction between the attachment patterns and severity of bombing attack in predicting PTSD by entering attachment styles (secure and insecure) into the third block. And finally, block 4 comprised CSS, 4 dimensions of shattering of world assumptions and 7 subscales of altered self-capacity. The dependent variables were the PDS and psychiatric co-morbidity total scores at T1. No outliers (Mahalanobis ≥3 SD) were detected during the exploration of diagnostics.

In terms of PTSD severity at T1, the results show that model 1 explained a significant proportion of the variance [$F(1,178)=14.66$, $P<.001$, $f^2= .08$] and that it explained just over 7% of the variance. After controlling for the variable in mode 1, model 2 did not improve significantly the prediction of the severity of PTSD at T1 [$F(1,177)=.93$, $P> .05$, R^2 change =.005]. After controlling for models 1 and 2, model 3 improved prediction significantly [$F(2,175)=24.08$, $P<.001$, R^2 change =.198, $f^2=.35$] and that explained just over 26% of the variance (adjusted $R^2=.263$). With models 1, 2 and 3 controlled for, the overall model 4 improved the prediction significantly [$F(12,163)=4.35$, R^2 change =.175, $P<.001$, $f^2= .83$]. The overall model 4 accounted for an additional 14% of the variance in the PDS total score (adjusted $R^2=401$). Tests associated with regression coefficient showed that the severity of bombing attack ($P<.05$), social support ($P<.05$), controllability of events ($P<.05$), safety and

vulnerability (*P*<.05), trustworthiness and goodness of people (*P*<.05) and affect dysregulation (*P*<.05) made a significant contribution to the model (see Table 4.17).

Table 4.17 Hierarchical multiple regressions for predicting Post-bombing PTSD T1

Predictor Variable		*B*	*SEB*	*β*
Outcomes:	PDS total score			
Step 1				
	SoB	6.82	1.78	.27**
Step 2				
	SoB	7.00	1.79	.28**
	LTE	1.37	1.42	.07
Step 3				
	SoB	5.46	1.61	.22**
	LTE	1.08	1.27	.05
	IA	.42	.06	.43**
	SA	-.17	.25	-.04
Step 4				
	SoB	4.22	1.49	.17*
	LTE	.76	1.18	.03
	IA	.09	.08	.10
	SA	-.02	.24	.00
	CSS	-.11	.04	-.18*
	SWA-CE	-.49	.19	-.22*
	SWA-CPP	-.35	.19	-.18
	SWA-TGP	-.49	.22	-.22*
	SWA-SV	.54	.17	.38*
	IASC-AC	.01	.14	.01
	IASC-SI	-.26	.14	-.14
	IASC-ID	-.03	.15	-.01
	IASC-TRA	.06	.16	.04
	IASC-IC	-.03	.14	-.03
	IASC-AD	.36	.13	.26*
	IASC-II	.12	.13	.09

(Continued on next page)

***Note*:** For the regression analysis, dummy variables were coded as follows. Severity of bombing: 1=not at all, 2= mild/severe; life-threatening event: 0=no trauma, 1= trauma; attachment styles: 1= insecure including fearful/dismissing/preoccupied; 2=secure, **IA**= Insecure Attachment, **SA**= Secure Attachment. $^{*}P< .05$, $^{**}P< .001$

Turning to the association between predictors and psychiatric co-morbidity at T1, no outliers were detected during the exploration of diagnostics. A similar regression analysis was computed. The results were the same in that model 1 explained a significant proportion of the variance at just over 4% [$F(1,178)=8.64$, $P<.05$, $f^2=.04$]. However, with the variable in model 1 controlled for, model 2 did not improve the prediction of psychiatric co-morbidity at T1 [$F(1,177)=.85$, $P>.05$, R^2change=.040]. With models 1 and 2 controlled for, model 3 improved significantly the prediction of psychiatric co-morbidity at T1, [$F(2,175)=25.60$, $P<.001$, R^2 change =.215, $f^2=.36$] and that explained 25% of the variance (adjusted $R^2=.249$). With models 1, 2 and 3 controlled for, the overall model 4 explained 32% (adjust $R^2=.319$) of the variance of psychiatric co-morbidity at T1. Controlling for models 1, 2 and 3 the overall model 4 improved significantly the prediction of psychiatric co-morbidity severity at T1 [$F(12,163)=2.51$, R^2 change =.115, $P<.05$, $f^2= .61$]. It did produce a significant increment in the variance of psychiatric co-morbidity. The overall model explained 38% of the variance (adjust $R^2=.319$). Regression coefficients showed that controllability of events ($P<.05$) and affect dysregulation ($P<.05$) made a significant contribution to the model (see Table 4.18).

Table 4.18 Hierarchical multiple regressions for predicting Post-bombing psychiatric co-morbidity T1

Predictor Variable		*B*	*SEB*	*β*
Outcomes:	psychiatric co-morbidity total score			
Step 1				
	SoB	8.61	2.93	.21*
Step 2				
	SoB	8.90	2.94	.22*
	LTE	2.17	2.34	.06
Step 3				
	SoB	6.31	2.63	.15*
	LTE	1.67	2.07	.05
	IA	.70	.11	.44**
	SA	-.31	.42	-.05
Step 4				
	SoB	4.08	2.57	.10
	LTE	1.87	2.04	.05
	IA	.26	.14	.16
	SA	-.13	.42	-.02
	CSS	-.03	.07	-.03
	SWA-CE	-.77	.32	-.21*
	SWA-CPP	-.25	.33	-.08
	SWA-TGP	.04	.39	.01
	SWA-SV	.18	.30	.08
	IASC-AC	.03	.24	.01
	IASC-SI	.03	.24	.01
	IASC-ID	.21	.26	.08
	IASC-TRA	-.21	.27	-.08
	IASC-IC	.02	.25	.01
	IASC-AD	.64	.22	.28*
	IASC-II	.05	.24	.02

*$P < .05$, **$P < .001$

4.5.15 Prospective associations between predictors, PTSD and psychiatric co-morbidity

To examine the relationship between severity of bombing experience and change in severity of PTSD and psychiatric co-morbidity over time, hierarchical multiple regressions were used to establish whether severity of bombing attack would predict severity of PTSD and psychiatric co-morbidity at time 2 over and above the effect of the severity of PTSD and psychiatric co-morbidity at time 1, life-threatening event, attachment styles, crises social support, shattering of world assumptions and altered self-capacity scores, all of which were found to correlate with time 2 PDS severity and psychiatric co-morbidity. One outlier (Mahalanobis ≥3 SD) was detected during the exploration of diagnostics and subsequently removed for this analysis.

Focusing on predicting PTSD severity at time 2, in the first regression, PTSD and psychiatric co-morbidity at time 1 and the bombing experience were entered in the first block, the life-threatening event in the second block, the two dimensions scores of the attachments patterns in the third block and then crises social support total score, in addition to 4 dimensions of shattering of world assumptions and the 7 dimensions of the altered self-capacity in the fourth block. The results showed that model 1 explained a significant proportion of the variance [$F(3,175) = 52.98$, $P<.001$], accounting for just above 47% of the variance (adjusted $R^2 = .467$). With model 1 controlled for, neither model 2 [$F(1,174)=1.37$, *ns,* R^2 change=.004], nor model 3 [$F(2,172)=1.35$, *ns,* R^2 change=.008] improved their prediction of PTSD severity at time 2. With models 1, 2 and 3 controlled for, model 4 did not produce a significant increment in the amount of variance explained [$F(12,160)=1.57$, *ns,* R^2 change =.054]. The major contribution was made by severity of PTSD at T1 ($P<.001$) and social support ($P<.05$) (see Table 4.19).

Table 4.19 Hierarchical multiple regression for predicting change in post-bombing PTSD T2

Predictor Variable		*B*	*SEB*	*B*
Step 1				
	SoB	.23	1.37	.01
	PDS T1	.66	.08	.67**
	GHQ T1	.00	.04	.01
Step 2				
	SoB	.04	1.38	.00
	PDS T1	.66	.08	.68**
	GHQ T1	.01	.04	.01
	LTE	-1.25	1.06	-.06
Step 3				
	SoB	.15	1.38	.00
	PDS T1	.66	.08	.68**
	GHQ T1	.00	.05	.01
	LTE	-1.29	1.06	-.06
	IA	-.03	.06	-.04
	SA	-.35	.21	-.09
Step 4				
	SoB	-.36	1.38	-.01
	PDS T1	.62	.09	.63**
	GHQ T1	.00	.05	.00
	LTE	-1.47	1.08	-.07
	IA	-.13	.07	-.14
	SA	-.34	.22	-.09
	CSS	-.12	.04	-.19*
	SWA-CE	-.09	.17	-.04
	SWA-CPP	.07	.17	.04
	SWA-TGP	.16	.21	.07
	SWA-SV	-.16	.16	-.12
	IASC-AC	-.01	.12	-.00
	IASC-SI	.04	.13	.02
	IASC-ID	.02	.14	.01
	IASC-TRA	.16	.14	.10
	IASC-IC	.08	.13	.07
	IASC-AD	-.09	.12	-.06
	IASC-II	-.05	.12	-.04

*$P < .05$, **$P < .001$

With regard to severity of psychiatric co-morbidity at time 2, a similar regression analysis was computed. The results were almost similar in that model 1 explained a significant proportion of the variance [$F(3,176)=51.29$, $P<.001$, $f^2=.87$) with just over 47% variance explained (adjusted R^2 =.466). With the variables in model 1 controlled for, model 2 did not improve prediction of psychiatric co-morbidity severity at T2 [$F(1,175)=.34$, $P>.05$, R^2 change =.001]. With models 1 and 2 controlled for, model 3 significantly improved the prediction of psychiatric co-morbidity [$F(2,173)$ =3.32, $P<.05$, R^2 change =.020, $f^2=.94$). This model explained 47% (adjusted R^2 =.469) of the variance of co-morbidity. After controlling for models 1, 2 and 3, model 4 did not improve prediction of psychiatric co-morbidity at T2 [$F(12, 161)=.95$, $P>.05$, R^2 change =.034]. The significant predictors were severity of PTSD at T1 ($P<.05$), severity of psychiatric co-morbidity at time 1 ($P<.001$) and secure attachment *(*$P<.05$) (see Table 4.20).

Table 4.20 Hierarchical multiple regression analysis for predicting change in psychiatric co-morbidity at time 2

Predictor Variable		*B*	*SEB*	*B*
Step 1				
	SoB	.22	1.89	.00
	PDS T1	.31	.11	.23*
	GHQ T1	.40	.06	.49**
Step 2				
	SoB	.35	1.91	.01
	PDS T1	.31	.11	.23*
	GHQ T1	.40	.06	.48**
	LTE	.85	1.46	.03
Step 3	SoB	.57	1.89	.01
	PDS T1	.32	.11	.24*
	GHQ T1	.41	.06	.49**
	LTE	.76	1.44	.02
	IA	-.11	.08	-.08
	SA	-.72	.29	-.14*
Step 4	SoB	.18	1.93	.00
	PDS T1	.28	.12	.21*
	GHQ T1	.41	.07	.50**
	LTE	.65	1.50	.02
	IA	-.20	.10	-.15
	SA	-.73	.31	-.14
	CSS	-.10	.05	-.12
	SWA-CE	-.05	.24	-.02
	SWA-CPP	-.06	.22	-.02
	SWA-TGP	.19	.29	.06
	SWA-SV	-.15	.22	-.08
	IASC-AC	.18	.17	.10
	IASC-SI	-.04	.18	-.02
	IASC-ID	-.31	.19	-.14
	IASC-TRA	.15	.20	.07
	IASC-IC	.07	.18	.04
	IASC-AD	-.25	.17	-.13
	IASC-II	.12	.17	.06

*$P < .05$, **$P < .001$

4.5.16 The interrelationships between severity of bombing attack, CSS, IASC-AD, SWA-TGP, SWA-CE and post-bombing PTSD and psychiatric co-morbidity

Further analysis was made to test the effects of the severity of bombing attack on the outcome variables PTSD-post bombing and psychiatric co-morbidity through proposed mediators variables. To test the hypothesis of the relationship between severity of the bombing, perceived social support, affect dysregulation, participant's trustworthiness and goodness of people, safety and vulnerability of the participants, T1 post-bombing PTSD and psychitric co-morbidity, asymptotic and resampling strategies were adopted to assess the indirect effects in multiple mediators. These strategies were created and recomonded by Preacher and Hayes (2008) to estimate the path coefficients in a multiple mediator model and generate bootstrap confidence intervals (i.e. percentile, bias-corrected, as well as bias-corrected and accelerated) for testing total and specific indirect effects of X on Y through one or more mediators. These strategies would control for the possible influence of covariates in the model. For the present and further analysis, the bootstrap samples were based on 1000 bootstrap samples and 95% level of indirect confidenant intervals.

The effect of the severity of bombing attack on PTSD through shatter TGP, shatter CE, IASC affect dysregulation and CSS was tested firstly, and secondly, the effect of shattering of the world assumptions CE on psychiatric co-morbidity through a proposed mediator variable IASC affect dysregulation. The results showed that the severity of bombing attack influenced PTSD directly and indirectly through shattering of world assumption TGP and IASC affect dysregulation. The severity of bombing attack also affected psychiatric co-morbidity through affect dysregulation and shattering of world assumptions-CE. Shattering of world assumptions-CE influenced psychiatric co-morbidity directly and indirectly through affect dysregulation (see Fig 4.2).

Regarding the relationship between severity of bombing and outcomes: Taking all the mediators together, CSS, IASC-AD, SWA-TGP and SWA-CE mediated the effect of severity of bombing on PTSD. The total and direct effects of the severity of bombing on PTSD were 6.8262 ($p<.05$) and 3.8425 ($p<.05$) respectively. The difference between the total and direct effects was the total indirect effect through the mediators with a point estimated as 2.9837 with a 95% BCa bootstrap CI of .9970 to 4.7761. In other words, the difference between the total and the direct effect of severity of bombing attack on PTSD was different from zero. This was a significant positive indirect effect in that severity of bombing attack led to development of greater shattering of world assumption-CE and greater feeling that people are not good and trustworthy, greater effect on self and the need for social support, which in turn led to greater severity of PTSD. Focusing on specific indirect effects, shattering of world assumptions-TGP and altered self capacity-AD were significant mediators, since zero for both of them was outside the range of 95% CI. Whereas, both social support and shattering of world assumptions-CE did not contribute significantly to the indirect effect of severity of bombing attack on outcome. In other words, PTSD was clearly predicted by TGP and AD (see Table 4.21).

Now turning to the relationship between shattering of world assumptions-CE on psychiatric co-morbidity: Taking altered self capacity-AD mediator the effect of shattering of world assumptions on psychiatric co-morbidity. The total and direct effects of shattering of world assumptions on psychiatric co-morbidity were -1.5300 ($p<.001$) and -.9437 ($p<.001$) respectively. The difference between the total and direct effects was the total indirect effect through the mediator with a point estimated as -.5863 with a 95% BCa bootstrap CI of -.9105 to-.3429. The difference between the total and direct effect of shattering of world assumptions was different from zero. It is therefore a significant positive indirect effect, implying that shattering of world assumptions-CE led to greater affect dysregulation, which in turn led to greater severity of psychiatric co-morbidity. With regard to the specific indirect effect, affect

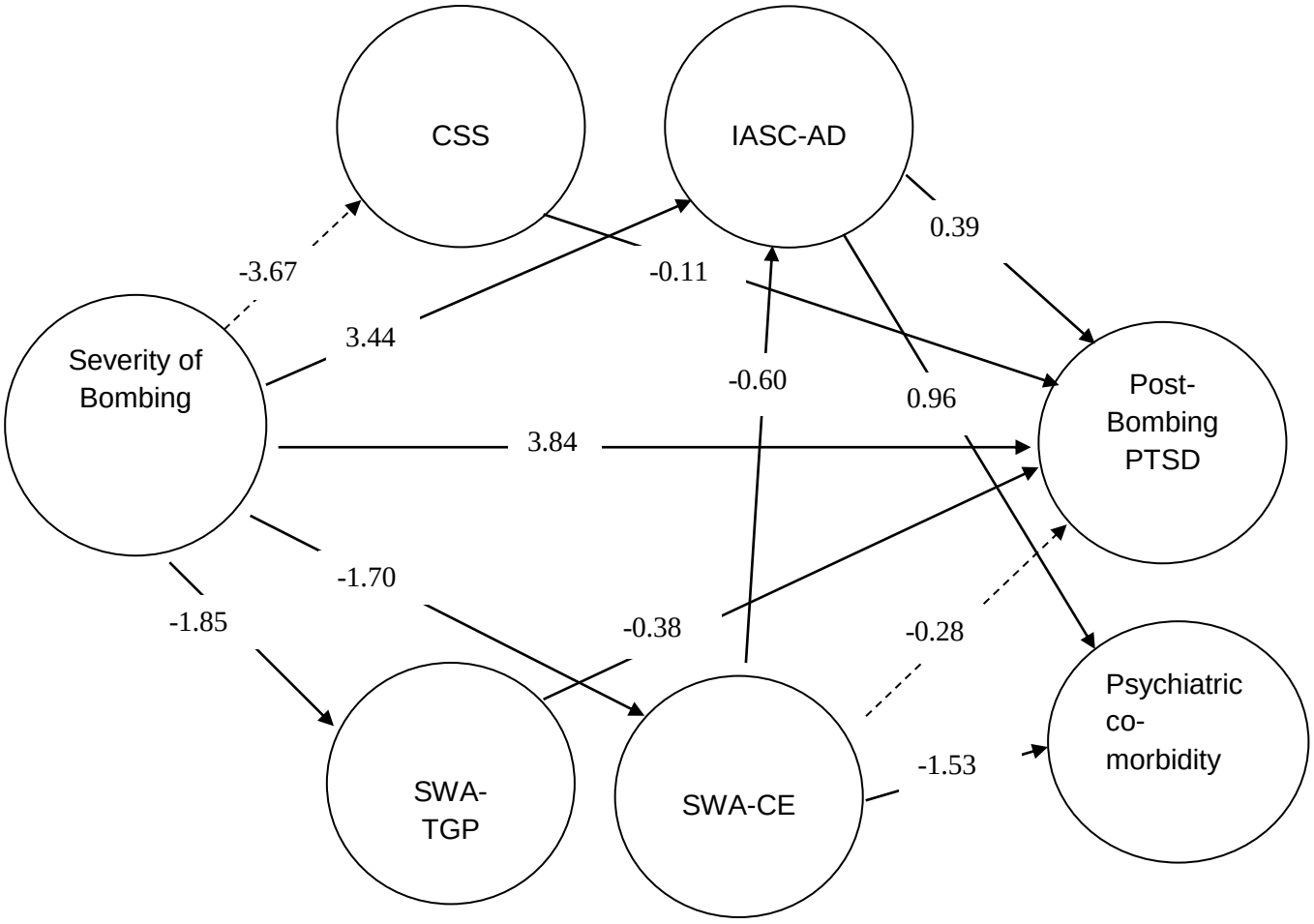
dysregulation significantly mediated the effect of shattering of world assumptions-CE and psychiatric co-morbidity, since zero was outside the 95% CI. In other words, GHQ was clearly predicted by AD (see Table 4.21 and fig 4.2).

Table 4.21 Mediation of the effects of severity of bombing attack on PTSD through crises social support, shatter CI, TGP and affect dysregulation

					Bootstrapping	
					Percentile 95% CI	
	Data	Boot	Bias	SE	Lower	Upper
	Indirect effects of severity of bombing attack on PTSD through mediators					
Total	2.9837	3.0215	.0378	1.0213	1.1500	5.2213
CSS	.4366	.4625	.0258	.3844	-.1353	1.4228
CE	.4835	.4641	-.0194	.3854	-.1992	1.3165
TGP	.7098	.7647	.0548	.4997	.0019	1.9659
AD	1.3537	1.3303	-.0234	.6151	.3005	2.6437
					BC 95% CI	
Total	2.9837	3.0647	.0810	.9326	1.0636	4.7058
CSS	.4366	.4554	.0188	.9326	-.1111	1.3271
CE	.4835	.4783	-.0052	.3950	-.0667	1.5285
TGP	.7098	.7537	.0438	.4797	.0350	1.9787
AD	1.3537	1.3774	.0236	.6182	.3919	2.8502
					BCa 95% CI	
Total	2.9837	2.9991	.0154	.9681	.9970	4.7761
CSS	.4366	.4293	-.0073	.3768	-.1240	1.4402
CE	.4835	.4798	-.0038	.3850	-.0699	1.5399
TGP	.7098	.7429	.0331	.5042	.0133	2.1044
AD	1.3537	1.3472	-.0066	.6014	.4206	2.8779
	Indirect effects of shattering of world assumption CE on psychiatric co-morbidity through mediator					
					Percentile 95% CI	
AD	-.5863	-.5783	.0080	.1409	-.8866	-.3167
					BC 95% CI	
AD	-.5863	-.5796	.0067	.1455	-.9558	-.3522
					BCa 95% CI	
AD	-.5863	-.5846	.0018	.1454	-.9105	-.3429

BC= bias corrected; BCa= bias corrected and accelerated

Figure 4.2 The results of the multiple mediator model for severity of bombing on outcomes with significant paths at 5% or better



Non dotted arrows denote significant paths

4.6 DISCUSSION

This longitudinal study aimed, first, to investigate the prevalence of PTSD and psychiatric co-morbidity and second, the trajectory of post-bombing PTSD symptoms, psychiatric co-morbidity and attachment styles approximately 1 month (time 1) and 5 months (time 2) after exposure to the bombing. This study also examined the role of a range of related variables (such as life-threatening event, attachment styles, perceived social support, altered self-capacities, shattering of world assumptions) of predicting PTSD and psychiatric co-morbidity. Finally, it also aimed to describe how different factors come together to influence post-bombing PTSD and psychiatric co-morbidity. This section will discuss the findings of the research questions and each hypothesis in turn as well as limitations of this study.

4.6.1 Research question 1:

What is the prevalence of post-bombing PTSD?

It was anticipated that a proportion of people ranging from 34% to 44% would meet the screening criteria of PTSD. This finding underscores the long-lasting mental health effects of bombing. However, the findings of the present study indicated that over 76% of the sample met the screening criteria for PTSD. The incidence was substantially higher and not within the range reported in similar research on other terrorist attack survivors (e.g. Ankri et al., 2010; Miguel-Tobal, 2006; North et al., 2002; North et al., 2011; Page et al., 2009; Somasundaram, 1996), despite the similarities in study design (Verger et al., 2004), the way in which PTSD was measured (e.g. Ankri et al., 2010; Luce et al., 2002), and the time of assessment after the bombing e.g. 4-9 weeks (Somasundaram, 1996). Assessments after the France bombing attack found a PTSD rate of 31% among survivors. Fifty percent was found in the 1987 bombing in Enniskillen, Northern Ireland where survivors were

screened to have PTSD symptoms (Verger et al., 2004). In the United States, 34% of survivors of the 1995 bombing of Oklahoma City had PTSD 6 months after the attack (North et al., 2004).

The occurrence of a higher prevalence of PTSD documented here compared with other extant post-bombing studies is predicted by the severity of the experience. The present study has shown that many survivors did realize that their lives were in danger during the event. It has been well-documented that perceived life threat is a robust factor for the development of post-disaster PTSD (Galea et al., 2002; page et al., 2009). So, it is possible that awareness of threat to life is a driver of high risk for PTSD (DiGrande, Neria, Brackbill, Pulliam, & Galea, 2011).

Consistent with this explanation, most of the participants in this study had experienced severely distressing events including intense fear of being killed, having seen bodily remains, having a friend or relative who sustained severe injury, and/or having lost a loved one during the bombing. So, the greater susceptibility to PTSD might lie in a biologic understanding of PTSD etiology, as images of grotesque and unimaginable scenes are encoded into memory and may be re-lived upon stimuli. Taken all together, the threat perceived by the individual and the secondary exposure (death of loved and other factors of perceived life threat) seemed to be the specific factors that related to the development of disaster related PTSD in survivors of terrorist bombing in Iraq.

It is also important to remember that the bombing experience was the first bombing experience that the cohort of this study had been exposed to and they were left without psychological intervention. Therefore, those participants who were directly exposed to a horrific incident might have been be overwhelmed by their personal experience to the point of being unable to benefit from any later support (Ankri et al., 2010). Individuals under such difficult circumstances might continue to express high levels of post-bombing symptoms, become severely incapacitated and

experience increased loneliness and isolation, contributing to the maintenance of PTSD symptoms.

A related explanation for this finding could be that bombing attacks are featured in many television programs, broadcasts and print media. These programs and frequent uses of images about bombings which represent strong reminders of their experience with potential re-traumatisation probably contributed to the high levels of PTSD discovered. Pfefferbaum et al. (2001) documented the influence of bomb-related television viewing on PTSD symptoms and severity levels following the 1995 Oklahoma City bombing. The study reported that the degree of television exposure was directly related to posttraumatic stress symptomatology and that specifically there was a significant relationship between level of emotional arousal resulting from television exposure and posttraumatic stress.

Such highly dangerous and distressing events leave numerous symptoms, such as intrusive thoughts about the bombing, avoidance of bombing stimuli hyperarousal and/or general numbing (APA, 2005). In this study, PTSD symptoms and specifically symptoms of avoidance were more prevalent, followed by intrusive thoughts, with lowest scores in hyperarousal symptoms.

In terms of avoidance symptoms, it is worth mentioning that just over half of the participants employed an avoidant strategy in trying not to think or to talk about the bombing. Furthermore, nearly one third avoided activities, such as people, or places that reminded them of their experience. This corresponds with the hypothesis that symptoms of avoidance, which lie at the heart of the DSM concept of PTSD, occur relatively predominantly in several forms after exposure to a dangerous event. Bombing victims appear to attempt to avoid stimuli which could act as constant reminders, whether through blocking of memories or other behaviours, in order to reduce fear, terrifying memories and horror accompanied with the bombing. So, avoidance is an attempt to avoid triggers that may bring back those memories about the incident. More generally, there appears to be a bias towards avoidance in Iraqi

culture which does not encourage the expression of feelings and thoughts relating to war events (Dyregrov et al., 2002). It is a common strategy for parents, relatives and friends to advise victims to try to forget about incidents, put what happened behind them and disregard what has been experienced (Freh, Dallos, & Chung, 2012).

With regard to intrusion symptoms, it is worth pointing out that less than one quarter often had waves of strong feeling about the bombing, and found that reminders could bring back feelings about it. Additionally, thirty-seven percent of participants had bad nightmares. Continuing thoughts of the deceased and other traumatic reminders (e.g. media coverage) can lead to traumatic re-experiencing or arousal symptoms. As a majority of the participants continued to experience such distress, and psychological intervention had not been offered, this may explain why so many of them re-experienced the bombing incident. Another reason could be cultural factors. Observations show that people in Iraq are curious and interested to see what is going on in a crowd or after an incident. Such looking and focusing on a horrible scene could produce more intrusion from exposure. In effect, this suggests a combination of preoccupation with incidents such that exposure to fearful scenes may occur but alongside this there is a culture of not discussing and emotionally processing events. Hence the two strands of this strategy can be seen to lead to a continuing state of unresolved anxiety.

Participants displayed hyperarousal as the least reported symptom in that less than half found themselves having fits of anger and almost one third had trouble falling or staying asleep. This is in line with literature. Somasundaram (1996) proposed that it is common for people to experience anger or tantrums, irritability and hostility after exposure to a life threat experience because they find themselves having been changed as a person. Accordingly, they have to change their lifestyle, daily activities and their future plans. However, it is not easy to adjust to these changes.

4.6.2 Research question 2:

How does psychiatric co-morbidity correlate with bombing-related PTSD?

It was hypothesized that there would be a high level of impact of the bombing experienced by the participants and that the participants would experience psychological distress, characterized by somatic problems, anxiety, social dysfunction and depression.

A substantial proportion of participants experienced and reported symptoms such as social avoidance, lack of concentration, fear and nightmares. An even higher proportion presented significant general mental health problems. The present study found that 92.7% and 86.1% of the bombing participants fulfilled the criteria for psychiatric caseness at T1 and T2 respectively, which confirmed the hypothesis that participants experienced psychological distress. This finding adds support to the existing literature which has found that exposure to a bomb attack tends to produce long-term psychological disorders among survivors (North et al., 1999; North, 2001; North et al., 2011).

However, despite using the same instrument, the prevalence of psychiatric problems was higher than what has been reported in literature. Wagner, Heinrichs, & Ehlert (1998) in a study of prevalence of co-morbid symptoms among professional fire-fighters in Germany using GHQ-28, estimated that 27% of the participants had psychiatric impairments. Neither was the prevalence comparable to the reported aftermath of the Oklahoma City bombing in 1995 (North et al., 1999), the Madrid train bombings in March 11, 2004 (Miguel-Tobal et al., 2006), or the aerial bombing in Sri Lanka (Somasundaram, 1996).

The prevalence was even higher than has been confirmed in various studies using the same scale but looking at different types of potential traumatic events. In

studies (e.g. Chung et al., 2000; Chung et al., 2001), 56% and 57% of those with direct exposure to an aircraft crash scored at the cut-off point of 4 or above.

The explanation of this finding could lie in the combination of exposure to direct dangerous potential trauma (bombing attack) and other indirect dangerous life events. Thus, it is not only the bombing attack experience, but other contributing factors such as exposure to dangerous life events which increased the risk of mental health problems.

Another potential explanation may be life circumstances in Iraq. Iraqis are living in an area of severe conflict and danger. These unsettled circumstances could affect the psychological well-being of the general population to the same degree that the bombing attacks do. For example, in the control group of this study, nearly 8% developed PTSD symptoms, which is significantly higher than is reported in other studies (e.g. Kessler et al., 2005). The ongoing difficult and dangerous circumstances that Iraqi people live in might have provided a convenient and appropriate environment for the emergence of such disorders and posed a considerable risk for psychological disturbance.

It is worth drawing attention to the point that the aftermath feelings of anxiety were reported the most. Anxiety was particularly problematic, probably due to its being reinforced by continual exposure to the anxiety-provoking environment; they were still living in the same circumstances and bombing attacks were still taking place many times a day. Indeed, how logically possible it was that a similar incident could happen again, and the next time they might not be so lucky. Most of the participants interviewed confirmed that, rationally speaking, the chance was very high. Such rational thinking might have played a role in maintaining the anxiety of what they might experience.

The hypothesis that the bombing group would experience more severe post-bombing PTSD and psychiatric co-morbidity symptoms at all levels compared with the control group was fully supported, indicating that people who did not experience

bombing are more successful in interpersonal functioning than people who experience bombing. This relates to the extent to which the person is able to: (1) maintain a sense of self-awareness and self-identity that is reasonably stable across ordinary difficult situations and interactions with other people; (2) cope effectively and positively with emotions without resorting to avoidance coping strategies; and (3) maintain meaningful social relationships with others that are not disturbed by inappropriate confrontations, inordinate feelings of being abandoned, or activities that purposely destroy normal social connections with the self and/or others.

4.6.3 Research question 3:

What is the longitudinal course of post-bombing PTSD and psychiatric co-morbidity symptoms?

Clearly, bombing attack is a serious health threat (North et al., 1999). The question now is to determine whether post-bombing symptoms increase or decrease over time. There was found to be a decrease in rates and severity of PTSD reactions, in which, over one third (59, 32.8%) of survivors directly exposed were screened with no PTSD at T2 compared with almost a quarter (42, 23.4%) at baseline assessment (T1). More importantly, all three symptoms showed evidence of decline over approximately 5 months, with avoidance achieving the largest effect size (r =.62, p<.001), followed by intrusion and hyperarousal achieving same effect size (r =.60, p<.001).

These findings are in agreement with broader trauma research literature which indicates a significant reduction regarding the total severity of PTSD symptoms over time after exposure to a bombing with or without treatment between 6 and 9 months (Sprang, 2001). Most longitudinal disaster studies have found that the total scores of the three PTSD symptoms diminish with time and tend to decline

significantly and meaningfully (Jakupcak et al., 2008; North et al., 2011; Thabet, Abed, & Vostanis, 2004), rather than persisting over time.

How resilience was achieved was found to occur through a number of processes. These were broadly framed within the world assumption theory model which addresses the role of fundamental scheme changes in outcomes reflecting resilience. Janoff-Bulman (1992) suggests that alleviation might be achieved by two avenues. First, one may develop more complex and flexible ways of understanding the world and dangerous events. This is seen in statements by people that they feel themselves to be 'wiser' or 'stronger' as a result of having had the dangerous experience. In effect they regard themselves as less naive and, arguably, with a more realistic view of the world as a potentially dangerous place. This view may be less likely to be 'fractured' by encountering further dangerous or challenging events.

Second, some assumptions are relevant to the purpose in life. These assumptions (e.g. mortality) are thought to be made more salient by an experience that highlights existential concerns. For instance, when individuals are faced with their mortality, they can become more concerned with the aspects of life that are most central, meaningful and important. The new salience of these core beliefs and values may influence the way in which new assumptions about the world and belief systems are constructed. Therefore, survivors reconstruct new assumptions about world, self and others that are more profoundly informed by what matters to them. For instance, a bombing survivor's statement that they have changed their priorities in positive ways after experiencing a tough experience might be reflective of such a route toward alleviation.

A further influential model that attempts to conceptualise both the negative and positive trajectory of PTSD symptoms following traumatic events was proposed by Shaw, Joseph, & Linley (2005). This model assumes that people have a natural tendency towards reconstructing their shattered schemes. To accomplish this aim, they are following two paths: First, people might assimilate the trauma that they have

been exposed to then modify the meaning to fit consistently with the contents of their assumptions. This could happen, according to the theory, when trauma survivors do not engage in the process of meaning-making regarding how much the event was significant. If survivors try to assign significance to the traumatic experience, they might undertake ways to rebuild the assumptive world. Second, they might accommodate the traumatic event by negative or positive accommodation. Negative accommodation means changing their assumptive world in ways that lead to distressing outcomes, whereas positive accommodation refers to growth-promoting. It can be argued here that literature supports the claim that people have a natural tendency to engage in positive accommodation, given a psychologically nourishing environment to alleviate the effects of their traumatic experiences (Shaw et al., 2005), particularly if there is a secure, stable and supportive environment.

Trauma research literature has also contributed to explanation of how the reduction of PTSD symptoms over time is achieved. Researchers emphasize the ability of people to adapt to the new traumatic and dangerous situations and maintain their level of psychological functioning, in spite of adverse events and environments. The overall evidence is that symptoms peak during the first year and then decline gradually.

The hypothesis was also that psychiatric co-morbidity would decline significantly over time. This hypothesis was fully supported in that there was a significant reduction over time. Although changes in psychiatric difficulties, including depression, anxiety, somatisation and social dysfunction seem to be debatable in the literature (Miller & Heldring, 2004), the decline over time could be due to the following: first, the habituation or immunology principle. The immune hypothesis could be a factor that might have contributed to the alleviation of mental health problems. The immune hypothesis is generally recognised as a mediator of distress and a predictor of psychological well-being among survivors of traumatic experiences (Laudanski & Lis-Turlejska, 2004).

A second reason for the decline in psychiatric problems could be the overlap between psychiatric problems and PTSD symptoms. It was proposed that people with PTSD tend to experience psychiatric difficulties including depression (North et al., 2011), anxiety, somatisation and social dysfunction (Wagner et al., 1998). A series of literature is in line with this finding. In studies (e.g. North et al., 1999), forty-five percent had a post-disaster psychiatric disorder and 34.3% had PTSD. It was also found that avoidance and intrusion symptoms were significantly associated with psychiatric distress, including social dysfunction (North et al., 2011).

4.6.4 Research question 4

How are attachment styles distributed among the sample and how do these change over time?

On the basis of previous literature, it was hypothesized that in the current high-risk sample of adults who were exposed to bombing attack, participants would demonstrate a predominantly insecure attachment style. This hypothesis was fully supported in that more than 33% of the participants exhibited a fearful insecure pattern, nearly a tenth an insecure preoccupied style and less than one third displayed an insecure dismissing pattern. In contrast, less than one third revealed a secure attachment pattern. This finding seems to favour the idea that people react to dangerous events in different ways but that generally, insecurity is triggered by a bombing attack experience where there is, specifically, a lack of security in interpersonal relations and difficulties in becoming close to and relying on others. This finding stands in agreement with literature looking at other stressful experiences such as adults who reported the experience of childhood abuse. A study by Muller et al. (2000) indicated that 76% of a sample of adults who reported the experience of

childhood abuse endorsed one of the three insecure attachment styles (dismissing, fearful or preoccupied).

The prevalence of insecure attachment prototype in this study was higher than reported in literature. In a study by Bartholomew and Horowitz (1991) to assess the degree to which each person approximates each of the four attachment styles found that only 8.8% of the 77 participants exhibited the fearful style, whereas the secure group exhibited a high rating (46.7%).

Two possible explanations are worthy of exploration. Previous research suggests that the experience of bombing attack could lead to feelings of mistrust of others, and therefore would reflect a state of anxious apprehension that holds back an individual's ability to have satisfying interpersonal relationships. Likewise, prior insecure attachments resulting from negative interactions with others could aggravate a victim's tendency to question the integrity of the self and doubt the trustworthiness, responsivity and accessibility of others. Secondly, methodological and sample characteristics might explain the differences in the prevalence of attachment patterns. Whereas Bartholomew and Horowitz (1991) used a sample of young students, this study was conducted on a selected sample of adults who were all exposed to a high level of direct threat. In addition, the two studies used different attachment measures, which prohibit direct comparison of the findings.

It was also hypothesized that bombing- related insecure attachment will decline over time with or without treatment. The findings of this study partially supported this hypothesis in that there was a significant reduction in the two dimensions of insecure attachment pattern (fearful and preoccupied) over time. More precisely, 8.3% (n=15) of the participants changed from insecure to secure attachment, but the majority changed from one insecure attachment style to another or stayed in the same category, whereas a very low proportion changed from secure to insecure attachment (see Table 4.10).

Although no previous longitudinal study has been conducted looking at the trajectory of attachment styles after the experience of a bombing attack, this finding is consistent with literature looking at the time course of attachment among psychiatric patients. In a study by Fonagy et al. (1996), psychiatric patients were administered the Adult Attachment Interview (AAI) twice over a period of one year. Of the 82 patients, the results reported changes from insecure to secure attachment status for more than 40%. In other studies (e.g. Diamond et al., 2003), attachment patterns for over one third of the patients changed from insecure to secure. Also, among a group of 29 people, Travis et al. (2001) reported a significant increase in secure attachment and a significant decrease in the number of participants with fearful attachment (Daniel, 2006).

It is not easy to make comparisons with the present study since most changes in attachment patterns reported in these studies were after the provision of psychotherapy. However, it is worth drawing attention to the following two points: First, changes could be due to the reliability of the measures used to assess attachment patterns over time. A portion of observed change is sometimes attributable to measurement error (Waters, Hamilton, & Weinfield, 2000). To validate the genuineness of changes in attachment patterns, the researcher should add other instruments such as Adult Attachment Interview (AAI) which do not simply rely on self-report measures which are prone to defensive biases. Bartholomew and Horowitz (1991) argued that people identified as dismissing and avoidant on the AAI and on the Hazan and Shaver questionnaire respectively were different in important respects.

Second, feeling secure after experiencing a highly dangerous event is relatively rare. However, resilience and decline of PTSD and other symptoms could make rates of secure attachment noteworthy. This decline and the reduction of some symptoms thus seem to be able to shift measured attachment in the direction of

greater security. This is not surprising since PTSD and symptoms of unresolved states are conceptualised as features of insecure attachment.

Findings of this study also supported the hypothesis that people with insecure patterns will show a greater number of PTSD symptoms. The results showed that the majority of the participants who developed probable PTSD symptoms exhibited insecure attachment patterns. This finding is in line with existing studies conducted to investigate the association between attachment patterns and PTSD after exposure to a stressful experience such as unresolved loss of a loved one (O'Connor & Elklit, 2008), childhood physical abuse and serious neglect (Dieperink et al., 2001; Mickelson, Kessler, & Shaver, 1997). They also proposed that the correlation between PTSD symptoms and exhibiting insecure attachment after a potential traumatic event could be derived from the idea that both conditions embody a lack of feeling secure in interpersonal relations.

The finding of this study can be explained by two potential processes: First, individuals with insecure attachment pattern are less resilient to life threat and are, therefore, more likely to show high levels of PTSD symptoms (Mikulincer & Florian, 1998). The second potential process is that individuals who perceive their social networks as being unsupportive under situations of continuous stress may exhibit elevated anxiety levels in the form of PTSD symptoms (Florian, Mikulincer, & Bucholtz, 1995).

4.6.5 Research question 5:

Do any variables predict the development of post-bombing PTSD and psychiatric co-morbidity?

The study also examined the extent to which the shattering of world assumptions is related to the severity of post-bombing PTSD and psychiatric co-morbidity. It was hypothesized that the shattering of world assumptions would relate to the severity of post-bombing PTSD symptoms and psychiatric co-morbidity. The present results supported this hypothesis in that after controlling for the severity of the bombing attack, shattering of world assumptions was associated with post-bombing PTSD and psychiatric co-morbidity shortly after the bombing. This supported previous literature, for example Harris and Valentiner (2002) and Walker, Archer, & Davies (2005) who confirmed that dangerous life events could shatter fundamental assumptions held by the survivor and people with no previous trauma had more positive assumptions toward others and the future. This finding is also consistent with some research looking at other traumatic events e.g. intimate partner violence (IPV) (Lilly, 2008) and victims of bullying (Rodríguez-Muñoz, Moreno-Jiménez, Vergel, & Hernández, 2010) where the shattering of world assumptions showed heightened reports of PTSD symptoms and showed significantly more negative beliefs about safety, the world, people and themselves. Harrigan (2008) also revealed that negative world assumptions appear to contribute and lead to increased severity of PTSD symptoms.

Focusing on the variables of shattered world assumptions, the findings revealed that of the four dimensions, safety and vulnerability, and trustworthiness and goodness of people had the strongest correlation with PTSD, whereas controllability of events was found to predict both PTSD and psychiatric co-morbidity. This finding corresponded to a body of literature (e.g. Janoff-Bulman, 1992).

To discuss the foregoing findings, one can draw insights from the assumptive world theory (Janoff-Bulman, 1992) and Terror Management Theory (TMT) (Greenberg, Pyszczynski, & Solomon, 1986).

The assumptive world theory argues that we all recognise and acknowledge incidents and traumatic events. Nevertheless, we are still in the mind-set that "it will not happen to me". Janoff-Bulman (1992) has accurately described this as the Invulnerability Assumption (IA). We are seen to be behaving on the basis of deceptive or illusionary invulnerability, and people generally tend to exaggerate the probability of experiencing positive occurrences in life and minimise the probability of experiencing painful and unexpected events. Experiencing tough traumatic events however may deeply shatter our held and probably unexamined invulnerability assumption and beliefs about the safety of our world and ourselves (Jianping, Yulong, Wei, & Zhihui, 2007). Subsequently, one will not be able to say “it will not happen to me”. Therefore, one’s prevailing assumptions about invulnerability and threat would be challenged. They may seem powerless in front of an overwhelming force and incapable of protecting themselves. Therefore, they realise that anything bad, dangerous, or unexpected could now happen to them. As a result, the victim's perspective toward others and the world changes and they recognise and believe they are living in a dangerous environment; the world is unsafe, filled with hatred and viciousness. Furthermore, they notice danger more and hold a preoccupation with danger. In other words, the trauma shatters their fundamental assumptions about the safety of their world, so they lose trust in others, particularly if the traumatic event has been caused by another human being.

The TMT suggests that people's worldview provides protection from concerns and death-related fears. However, experiencing a dangerous event in which an individual’s worldview is unable to provide this protection would leave the victim vulnerable to overwhelming terror and may lead to an undermining of the worldview’s capacity to protect them in the future, leaving them vulnerable to fears of all sorts. As

a result, the individual is left to struggle with recurrent bouts of anxiety and related negative ideation (Abdollahi, Pyszczynski, Maxfield, & Luszczynska, 2011).

Effective human functioning, however, requires an anxiety-buffering system that manages the awareness of mortality and fear (Harmon-Jones et al., 1997; Taubman-Ben-Ari, 2011), as well as provides protection against potential anxiety that results from awareness of the vulnerable and transient nature of life. Disruption of "anxiety-buffering" would leave one prone to bouts of anxiety, including re-experiencing thoughts, avoidance of threat-related stimuli and heightened arousal (Harmon-Jones et al., 1997). In other words, the subjective experience of the psychological distress (such as PTSD and co-morbidity) is an overwhelming experience of terror that leads to a breakdown of normal anxiety-buffer functioning.

The results also supported the hypothesis in that after controlling for the severity of the bombing experience, one or more of the dimensions of the altered self-capacity is expected to be associated with PTSD and psychiatric co-morbidity. The results did show that affect dysregulation had short term effects on PTSD and psychiatric distress. However, they did not influence psychological distress outcomes in long term. This finding is consistent with the widely held view that PTSD is a disorder of disturbances in ability to regulate self-capacities (Wolfsdorf & Zlotnick, 2001). This is also consistent with existing literature suggesting that PTSD is an attempt to rebuild and restructure one's core sense of self that occurs when a person experiences a traumatic event (Mitchell, 2005; Yehuda & McFarlane, 1995). This finding is also consistent with some research looking at other potential traumatic events. Studies e.g. Zlotnick (1999); Zlotnick (1997) found that a greater degree of affect dysregulation was significantly related to PTSD as well as psychiatric co-morbidity among a sample of 85 incarcerated women.

One could argue that it seems normal for people to develop disturbances in the ability to regulate self-capacities so soon after the bombing. The findings of this study, however, showed that participants experienced significant variation in terms of

this sort of reaction to the bombing e.g. people experienced different degrees of abandonment concerns, idealisation and susceptibility (see Table 4.13). In other words, approximately one month after the incident, participants had different degrees of altered self-capacities. So, it is not always the case that people develop severe degrees of altered self-capacities after a bombing.

The hypothesis that social support would be associated with PTSD was confirmed. The results showed that high levels of perceived social support is significantly associated with decreased levels of PTSD symptoms, indicating that social support may serve as a naturalistic protective resource among survivors in the face of terrorist bombing-related perceived stress.

The magnitude of this finding is consistent with existing literature (e.g. Páez et al., 2007; Tucker et al., 2000; Ankri et al., 2010) suggesting that social support environment could be another factor that might contribute to alleviation of post-bombing PTSD. It is also consistent with studies showing that people who perceive their social network (family, friends and relatives) as being supportive could overcome, to a significant degree, the impact of their experience of being in a bombing (North et al., 2004).

According to the stress-buffering model, positive emotions would help to broaden cognitive processes and rebuild positive personal emotions. Further, it has been postulated that support may alleviate the impact of stress by providing a solution to the problem, by reducing the perceived importance of the problem, or by providing a distraction from the problem (Cohen, 2004).

4.6.6 Research question 6:

How can different factors be integrated to influence post-bombing PTSD and psychiatric co-morbidity?

Although PTSD and psychiatric co-morbidity have been shown to decline over time, for some people these symptoms could be persistent and significant. Our understanding of the pathogenic pathways of post-bombing PTSD and general psychiatric distress is limited. Therefore, it was hypothesised that the severity of the bombing would influence post-bombing PTSD and psychiatric co-morbidity directly. And second, the severity of the bombing would influence one or more of the dimensions of shattered world assumptions and one or more of the factors of altered self-capacities and perceived social support which, in turn, would influence post-bombing PTSD and psychiatric co-morbidity.

The first hypothesis was partially supported in that the severity of the bombing was directly associated with post-bombing PTSD, indicating that the severity of the experience may present specific mechanisms for the generation of the psychiatric sequelae of disasters survivors. The finding confirms existing literature that severity of experience (represented by number of injuries and secondary exposure through injury and death of loved ones) is a risk factor for development of PTSD symptoms (North et al., 1999). There is also evidence that individuals directly affected by a "severe experience" bombing have higher levels of post-bombing disorders than indirectly affected "low severity" individuals (Somer et al, 2005; North et al., 1999). This finding might potentially be due to the fact that people with a severe experience tend to magnify the impact of stressful events (bombing in this case) and manifest a variety of intrusion and avoidance symptoms.

It is noteworthy that in addition to the severity of the bombing having a direct influence, according to the results of this study, it also had the capacity to influence

PTSD through mediators, namely, affect dysregulation and sense of trustworthiness of others. As was mentioned, exposure to stress and dangerous events (in this case bombing attack) is likely to bring about physical and mental health problems such as PTSD symptoms and may affect many aspects of the survivor's life (Shahar et al., 2009). However, trauma literature proposes that not all people exposed to terrorist experience exhibit health problems. This was supported by the results of this study in that severity experience of the bombing influenced PTSD symptoms indirectly through mediators. One could argue that this finding showed support for the personal characteristics model in that there are indirect different factors which could explain why not all people develop PTSD symptoms after exposure to a dangerous event.

The finding that severity of bombing experience affected PTSD through TGP could be discussed according to the conceptual model of the relevant world assumptions by Janoff-Bulman (1992). It was argued that exposure to bombing may affect many aspects of the survivor's life, including cognitions (e.g. Ehlers & Clark, 2000). Trustworthiness and goodness of people is among the cognitive changes that have been ascribed, since the bombing is a man-made event. Terrorist attacks which are maliciously committed are therefore expected to negatively affect cognitive schemes and cause more detrimental assumptions reflecting the view that people are basically dangerous, bad and inconsiderate. In Janoff-Bulman's terms, survivors who did not have the psychological protection to tolerate the painful process of rebuilding the cognitive schema "trustworthiness and goodness of people" might experience feelings that people are not beneficent and therefore reflect an intense feeling of avoidance and insecurity. These personal attributes are conducive to behaviours such as avoiding people, activities, crowds and places which, in turn, might encourage PTSD symptoms.

Turning now to the result with affect dysregulation as the mediator: severity of bombing experience affected PTSD through difficulties in regulation of affect. Similarly, severity of bombing also influenced affect dysregulation which in turn

affected psychiatric co-morbidity. In line with the self-trauma theory, the noxious effects of the potential traumatic event are often intensified by personal attributes. Among the most prominent personal variables that have been identified as stress elevators is effect dysregulation.

The possible explanation for this finding is offered by self-trauma theory, which postulates that people develop a sense of affect dysregulation as a result of their attachment relationships. For individuals with a secure attachment pattern, this self-capacity will enable them to cope effectively with stressful situations in life. Individuals who are classified as insecure in attachment, possibly as a result of trauma, will develop an altered affect dysregulation capacity. This will not allow them to cope with dangerous events as effectivelly as those with secure attachment patterns and would indicate psychological distress (Allen, 2006). This is not too surprising given what we know about the attachment profile of the sample of this study.

Finally, the severity of the bombing influenced psychiatric co-morbidity through mediators, namely, controllability of events which confirms existing literature in that experiencing a high-threat event could deeply shake the beliefs regarding the controllability of events in the world (Janoff-Bulman 1992; 2004; Solomon & Laufer, 2004). This subsumed shatter beliefs about controllability over outcomes in one's life, and the events that befall them and over others.

This finding could be discussed according to the "Assumptive World Theory" (Joseph & Linley, 2005). It suggests that survivors develop two potential processes following the dangerous event: first, assimilation which involves altering the interpretation of the event so that it is less contrary to the assumptive world. And second, accommodation which involves revising the contents of the assumptive world in such a way that acknowledges the possibility that dangerous events are possible. The results of the trauma survivor's accommodation and assimilation tasks are thought to determine the degree to which they manifest a variety of potential

outcomes. Trauma-related pathology (i.e., psychiatric symptoms) is thought to occur when the assumptive world was revised and reflected uniformly negative beliefs that the survivor is not in control over dangerous events in life (Foa et al., 1999; Janoff-Bulman, 1992; 2004).

4.7 LIMITATIONS OF THE STUDY

This study is, of course, not without its limitations, so it is worth pointing out the limitations. Firstly, although the researcher tried to recruit participants for the control group from some regions that are considered safe such as North Mosul, West Baghdad and parts of Kurdistan, the selection criteria of the group could be a potential criticism of the study. One could argue that the control group is not purely control since they would have witnessed and heard about bombings almost daily. Witnessing and hearing about bombings could be another source of exposure (Bux & Coyne, 2009). So, the extent of media exposure may have influenced responses.

Secondly, drawing on the findings of recent studies that have examined the relationship of war exposure and daily stressors to mental health status, the group differences in income could also be a limitation as they may have influenced findings and possibly included a covariate. Therefore, low income (daily stressor) may influence the relationship between trauma and PTSD symptoms (Miller & Rasmussen, 2010).

Thirdly, although 6-8 weeks after the dangerous event is recommended as the best period to assess the initial responses (Somasundaram, 1996), potential traumatic reactions can be delayed, even by six months (Delayed PTSD), and this was missed in this study. Also a longer follow-up study would have given a more complete picture, but again, reactions to new stresses due to the difficult life circumstances and on-going bombing attacks could have been difficult to exclude.

Finally, the prevalence rate of the probable PTSD was based on a self-report instrument. The limitation of self-report is not an exclusive problem for the present study and appears in many studies on PTSD following perceived life threat (Gillespie et al., 2002; Luce et al., 2002; Page et al., 2009). It has been argued that self-report measures often over-estimate symptoms and it is advocated that using Structured Clinical Interview (SCI) may help to address their limitation. However, it was not possible to conduct SCI for such a large group of participants due to the time constraints.

The strengths of this study are, however, important to consider. Little is known about people's reaction to war in Iraq. What we do know is based on studies which aimed to investigate prevalence rates of PTSD among diverse populations who probably had not witnessed such horrific war-related events. We know of no study looking at psychological consequences and mental health following bombing attacks among adults.

One of the main strong points of this study was employing the longitudinal prospective design. This design allowed the researcher to assess the stability and continuity of variables such as PTSD, psychiatric co-morbidity and attachments styles. This provided more definitive results since data drawn longitudinally are much stronger than correlational data.

The next chapter will be the second quantitative study. The upcoming study is complementary to the studies in the preceding chapters 3 and 4. Again, this study and its selected predictors are driven by the qualitative findings.

CHAPTER 5

STUDY 3: POST-BOMBING PTSD AND CO-MORBIDITY AND THEIR RELATIONSHIP WITH ATTACHMENT STYLES, COPING STRATEGIES, RELIGIOUS COPING, DEATH ANXIETY AND MEANING IN LIFE

5.1 INTRODUCTION

Epidemiological studies found that, while 40 to 90% of the general population may experience a dangerous and potentially traumatic event at some point during their lifetime, less than 10% develop PTSD symptoms (Helzer, Robins, & McEvoy, 1987; Kessler et al., 1995; Norris, 1992). This indicates, as it was mentioned in study 2, that exposure to dangerous events itself is not sufficient to explain the etiology of PTSD and psychiatric co-morbidity. However, the dangerous event, even if it passes quickly and does not lead to PTSD, can provoke deep fear and anxiety which may relate to their most fundamental concerns about living (Martz, 2004).

Studies (e.g. Lonetto, 1980) have revealed that exposure to life-threatening events has been found to be associated with death anxiety. People were found to be characterized by their fear about shortness of life. Literature also proposed that survivors, such as in the Buffalo Creek flood, showed death anxiety related to memories and images of their experience. In particular, they showed that their dreams were related to their own death (Lifton & Olson, 1976). Yalom (1980) also asserted that death anxiety is the fundamental source of psychopathology, which is a view suggesting that death anxiety may influence non-adaptive reactions to dangerous and traumatic events.

This possible relationship between death anxiety, overall psychological health and development of PTSD symptoms following life-threatening events has been

proposed by death anxiety research (Lifton, 1993). Research involving 1,709 Vietnam veterans indicated that having been a target of injury or death was most strongly related to a diagnosis of PTSD. A study has also found a significant relationship between PTSD symptoms and variables related to death, such as seeing someone killed, receiving an injury, or killing others among Vietnam veterans (Martz, 2004). This indicates clearly that elevated death anxiety may be an important factor to investigate in the development of PTSD symptomatology. Similarly, death anxiety was examined to predict PTSD among 313 veterans and civilians (Civilian 42.2%, Veteran 57.8%) with spinal cord injuries. Death anxiety was significantly found to be a predictor for PTSD reactions (Martz, 2004). However, the relationship between death anxiety following a threatening-life event, such as a bombing, and post-bombing PTSD remains unclear. If death anxiety was shown to be associated with post-bombing PTSD symptoms, it would shed new light on understanding of PTSD responses and may have important implications for diagnosing PTSD.

Some frameworks have tried to explain the contribution of death anxiety to post-traumatic stress reaction. The two-factor model of death anxiety (Lonetto & Templer, 1986) claims that the degree of death anxiety is determined by two factors: (1) general psychological health and (2) life experiences related to death. The degree of death anxiety is associated with our psychopathological condition. People who, for example, suffer from depression, anxiety disorders or have had life-threatening experiences may suffer from increased death anxiety. The interrelation between these two factors seems plausible in that, after exposure to a life-threatening event, the degree of death anxiety may increase and PTSD symptoms may develop. Once this psychopathological condition (PTSD) has developed, it may heighten even further the degree of death anxiety (Chung et al., 2000).

One could argue that this straightforward positive correlation between dangerous events or life-threatening experiences and death anxiety could be considered somewhat controversial. Some studies have claimed that people tend to

be less anxious and fearful of death after a near-death experience. Noyes (1980) reported that more than 41% of life-threatening accidents survivors showed a decrease in death anxiety since the accident. This poses the question: why do some people seem relatively unaffected by reminders of mortality? In other words, how do people adapt to threatening events?

Terror Management Theory (TMT; Greenberg et al., 1986), as a potential explanation, proposes that conditions that remind people of mortality could increase death anxiety. However, the theory states that finding meaning and purpose in life can mediate anxiety and other negative emotions caused by facing mortality. A series of literature supporting this assertion indicates that people respond with efforts to reinforce a sense that their lives are imbued with meaning, when that awareness of death following exposure to a dangerous event is heightened (Routledge & Juhl, 2010).

Finding meaning after exposure to a traumatic event has long been accepted in literature as a factor to alleviate negative emotions. Joseph and Linley (2008) proposed that people work through and search for new meaning in life after exposure to traumatic events. Once these new meanings are found and positively reconstructed, such as views about the self, the world and the future, the new assumptive world begins to emerge and could alleviate the effects of the dangerous event. Evidence also suggests that the effects of traumatic events might not be exclusively negative. Literature showed that people who experience traumatic events report positive, as well as negative, life changes. Several pieces of research have reported positive effects, such as a reevaluation of priorities (Linley, Joseph, Cooper, Harris, & Meyer, 2003). In the same vein, a study by McIntosh, Silver, & Wortman (1993) found that those who found meaning in the event were less distressed.

Focusing on the relationship between meaning in life and PTSD following bombing, Updegraff, Silver, & Holman (2008) reported that the ability to find meaning was associated with reduced fear and posttraumatic stress symptoms among a

sample of 9/11 terrorist attack survivors. Additionally, previous work showed that finding meaning in life was related to less PTSD symptoms among 236 college students, aged from 14 to 31, following the September 2011 bombing attack in the US and following the Madrid bombings on March 11, 2004 (Steger, Frazier, & Zacchanini, 2008).

Turning to the contribution that coping can make independently of psychological distress after life-threatening events, research such as Muldoon and Downes (2007) and Tiet et al. (2006) suggests that effective coping strategies enable an individual to tolerate, minimize, accept or ignore what one cannot manage. It was also suggested that those strategies can help to moderate the outcomes of stressful situations and dangerous events and affect development of PTSD symptoms and psychiatric co-morbidity (Chung et al., 2008; LeBlanc, Regehr, Jelley, & Barath, 2008; Tiet et al., 2006). Therefore, it is important to elucidate those factors.

In view of these perspectives, it was deemed important to examine whether existential fears in the form of death anxiety, meaning in life, and coping strategies were predictive of posttraumatic stress reactions and psychiatric co-morbidity after a bombing attack experience.

5.1.1 Aims and hypotheses

Based on the foregoing research findings, this study was concerned with the following questions/aims and hypotheses:

Aim (i) What is the relationship between the predictor variables (perceived life threat, attachment styles, life-threatening event, coping strategies, religious coping, death anxiety, and meaning in life) and the outcomes (the severity of post-bombing PTSD and psychiatric co-morbidity)?

Hypothesis (1): After controlling for the severity of the bombing, one or more of the factors of attachment styles, coping strategies, religious coping, one of the dimensions of the meaning in life scale and death anxiety (Yalom, 1980) are expected to be associated with the outcome variables.

Aim (ii) What is the interrelation between predictor variables and the outcomes?

Hypothesis (2): Death anxiety would influence post-bombing PTSD and psychiatric co-morbidity directly.

Hypothesis (3): Death anxiety would influence one or more of the dimensions of the coping strategies, religious coping, one or more of the dimensions of attachment patterns and meaning in life which, in turn, would influence post-bombing PTSD and psychiatric co-morbidity.

5.2 METHOD

This study adopted a prospective longitudinal design. In this study, upon gaining written informed consent, participants were invited to complete the following questionnaires: Relationship Scales Questionnaire (RSQ), Multidimensional Fear of Death Scale, the Brief Arab Religious Coping Scale, Coping Responses Inventory, Meaning in Life Questionnaire, PDS, and the GHQ-28. Information on their perception of threat from the bombing attack had been also collected using a brief self-constructed questionnaire. Approximately five months following the initial assessment, participants were invited to take place in a second assessment. They completed the PDS, GHQ-28 and the RSQ.

Ethical approval for this study was obtained in advance from the Faculty of Health ethics committee at the University of Plymouth. Permission was also obtained

from the Ministry of Health (Moh), Ramadi General Hospital (RGH) and Fallujah General Hospital (FGH) in Iraq to collect the data.

5.2.1 Sampling and recruitment

To estimate the number of participants needed for this study, power calculation was conducted. The power calculation assumed analysis by regression with the post-bombing PTSD and psychiatric co-morbidity as dependent variables and five predictor variables for the study (attachment styles, coping strategies, religious coping, death anxiety and meaning in life). With a sample size of approximately 178 for the study and alpha set at $p<.05$, the study would achieve .95% power [$F(11, 166)=1.84$] (Cohen, 1988).

5.2.1.1 The experimental group

Clinicians and/or nursing staff at the Ministry of Health-Iraq, and nursing staff at RGH and FGH, who were acquainted with the inclusion and exclusion criteria, were asked to identify eligible participants for the study.

One-hundred and eighty five (Male=91, female=94) people who had recently been exposed to a bombing attack in Iraq were selected for the study and recruited from the MoH in Iraq.

People were not eligible to participate in the study if: 1) they were less than 18 years old, 2) they had been exposed to a bomb attack more than once, 3) the incident was less than one month prior to the interview, 4) they were soldiers or policemen/women, 5) they were not able to read and write, 6) they had long term psychiatric history and 7) they were cognitively impaired. .

Two-hundred and thirty individuals were identified. Fifty-two (m=32, f=20) were individuals who had recently been exposed (1-3 months) to a bombing attack, 93 were individuals (m=38, f=55) who had been exposed between 3-6 months earlier

and 85 were individuals (m= 37, f=48) who had been exposed 6 months earlier or more. Of the 230 who were invited to participate in the study, forty- five (m=16, f=29) did not wish to take part, yielding a final number of 185 participants (m=91, f=94). A full description of the participants and other demographic variables will be discussed in more detail in the results section of this chapter.

In order to make comparisons between predictors and some of the outcome variables, data of the control group that was collected for the previous study was used.

5.2.2 Questionnaires

5.2.2.1 Demographic characteristics

An 8 item demographics questionnaire was included in the study to gather information about participants' gender, age, marital status, ethnicity, employment, education, income and major life illnesses.

5.2.2.2 A package of questionnaires

A package of questionnaires was employed in this study, including MMSE-long version, Bombing Experience Questionnaire (BEQ), RSQ-30 and the outcome measures (PDS and GHQ-28). All these questionnaires were elucidated in section 4.3.3.

5.2.2.3 Predictor measures

1. Death anxiety

The Multidimensional Fear of Death Scale (MFODS) (Hoelter, 1979) was used to measure the intensity of participants' fear of death. The MFODS consists of 42-items and comprises an eight-dimensional measure of fear of death. These eight dimensions of the scale represent different facets of the fear of death: F1) fear of

dying process (including painful and violent deaths (6 items) includes items such as ‘‘I have a fear of dying violently’’; F2) fear of dead (including avoidance of both human and animal remains (6 items) containing items such as ‘‘discovering a dead body would be a horrifying experience’’; F3) fear of being destroyed (including dissection and cremation of the body (4 items) containing items such as ‘‘I am afraid of my body being disfigured when I die’’; F4) fear of significant others (including both apprehension about the death of persons important to us and their apprehension about our death (6 items) consists items, such as ‘‘I have a fear of people in my family dying’’; F5) fear of the unknown (including fear of nonexistence) (5 items) containing items such as ‘‘I am afraid that there is no afterlife’’; F6) fear of conscious death (including anxieties about falsely being declared dead (5 items) including items such as ‘‘It scares me to think I may be conscious while lying in a morgue’’; F7) fear of the body after death (including concerns about isolation of the body (6 items) containing items such as ‘‘The thought of being locked in a coffin after I die scares me’’; and F8) fear of premature death (including concerns that death will prevent us from achieving important things in life or having significant experiences) (4 items) consisting of items such as ‘‘I am afraid I may never see my children grow up’’ (Zana, Szabo, & Hegedus, 2009). Participants respond to the statements based on Likert scale anchored by 1= strongly agree and 5= strongly disagree with a neutral midpoint (see appendix 10).

A peculiarity of this questionnaire is converse measurement. It means that a lower score reflects a greater death anxiety. Some studies (e.g. Zana et al., 2009) have used reciprocal values; this study, however, keeps the same values and this is to increase lucidity and representation of the study.

The psychometric properties of the MFODS were tested by researchers (Barr & Cacciatore, 2008; Walkey, 1982). The Cronbach’s α values for the eight MFODS individual scales ranged from .65 to .82.

Despite the fact that this questionnaire offers a refined and consistent measure of a broad spectrum of death anxiety for members of western societies, it was confirmed that this questionnaire is a convenient tool to use with an Islamic sample (Neimeyer & Moore, 1994). In summary, the exploratory factor analyses of the MFODS conducted by researchers were encouraging, suggesting that the questionnaire offers sound psychometric properties. For these reasons, the MFODS is considered to be an easy, applicable and sophisticated tool to measure death anxiety.

2. Religious coping

To assess religious coping with bombing, the Brief Arab Religious Coping Scale (BARCS) (Amer et al., 2008) was chosen for the following reasons: 1) to date this is the one published scale with an Arab sample; 2) this is the most commonly used scale using questions that are not culturally-sensitive to Muslim or Arab participants compared to other scales such as Ways of Religious Coping Scale (WORCS) and the Religious Coping Activities Scale (RCAS). The WORCS, as an example, contains items related to confession of sins (item number 5) and thinking about Jesus as a friend (item number 28) (Boudreaux, Catz, Ryan, Amaral-Melendez, & Brantley, 1995). Clearly, these are Christian principles. The RCAS also contains items that might be considered forbidden for Muslims (e.g. anger towards God, questioning faith, asking God why the stressful event happened) (Pargament et al., 1990). Likewise, the Religious Problem-Solving Scale (RPSS) contains a subscale of collaborative coping in which God is conceptually placed on the same level as the respondent (e.g. "Together, God and I put my plans into action.") (Pargament et al., 1990). This is clearly an undesirable concept to most Muslims. And finally, most of the published measures are lengthy (such as WORCS with 40 items) and therefore not convenient for studies such as the current one in which a variety of other questionnaires are administered.

The BARCS consists of different types of religious coping strategies such as performing prayers, asking God for help and support, recitation of Holy Books and religious stories, getting help from religious leaders, and attending religious events at the places of worship. Participants respond to the statements anchored by not used at all/does not apply= 0, used always =3 with a neutral midpoint of sometimes =1 and used often =2 (see appendix 11). Respondents' final score on the BARCS questionnaire is the total sum of the 15 items and ranged from 0 to 45. The psychometric properties of the BARCS were assessed. Cronbach's alpha for the scale was.94 (Amer et al., 2008).

3. Coping strategies

The 48-item version of the Coping Responses Inventory (CRI) (Moos, 1988) was used in this study to assess the coping strategies that have been used by participants. The CRI comprises two dimensions of coping: approach and avoidance responses. These two dimensions represent the individual's orientation towards a stressor. These two domains are further divided into eight subscales and organize coping responses in eight dimensions. The first four dimensions: Logical Analysis (LA), Positive Appraisal (PA), Seeking Support (SS) and Problem Solving (PS) have been organized to measure approach coping, whereas, the second four dimensions: Cognitive Avoidance (CA), Acceptance (A), Alternative Rewards (AR) and Emotional Discharge (ED) have been designed to measure avoidance coping. Each dimension is composed of 6 items. The first two indices in each domain reflect cognitive coping efforts; the second two, in each domain, reflect behavioural coping efforts.

The CRI consists of two parts. The respondent is initially asked to select a recent stressor problem or situation they have experienced, and then to rate the ten items in Part I, regarding how that stressor is appraised on a four-point scale 'Definitely' (0), 'Mainly No' (1), 'Mainly Yes' (2), 'Definitely Yes' (3). Once the stressor has been identified, the respondents will be asked to rate their reliance on each of the 48

coping items, Part II, on 4-point frequency scales with "0=not at all", "1=once or twice", "2= sometimes" and "3=fairly often", yielding subscales scores that range from 0-18 (see appendix 12).

The psychometric properties of the CRI have been investigated by researchers. In a study by Moos et al. (1990) the internal consistencies was found highly correlated with earlier coping questionnaires emanating from Moo's researches (Moos, 1990). It also found that the Cronbach's α for the eight CRI subscales ranged from .61 to .74.

CRI was developed to be more appropriate for the purposes of this study. In order to make the questionnaire more precise about the bombing incident and to let the participants focus on it, the word "problem" was changed to "bombing" in the following items (1, 3, 11, 13, 14, 29 and 45).

4. Meaning in life

Development of a comprehensive questionnaire to assess the meaning in life was always a continuous process in literature and therefore many questionnaires have emerged. The Purpose in Life test (PIL) (Crumbaugh & Maholick, 1964), as one of the earliest scales, created to assess psychopathological states characterized by lack of meaning, evaluates life goals, ambitions and future plans. As an alternative to the PIL, the Life Regard Index (LRI) (Battista & Almond, 1973) was created. The LRI is based on a conceptualization of meaning in life as a commitment to goals and assesses meaning in life independent of personal values, in terms of individual's feelings of fulfillment. It has also been found that some other measures were created to assess meaning in the context of a negative life (e.g. the Meaning in Suffering Test, the Assumptive Worlds Scale and the Constructed Meaning Scale) (Jim, Purnell, Richardson, Golden-Kreutz, & Andersen, 2006).

It was found that the majority of these questionnaires were not convenient for this study for the following reasons: First, the large number of the items and the multiplicity of subscales (e.g. Meaning in Life Questionnaire Following Cancer consists of 21 items and contains 4 subscales such as beliefs in the purpose and value of life, spirituality, the coherent explanation of life events, and a sense of well-being (Jim et al., 2006). Second, although searching for meaning does not always result in finding meaning (Updegraff et al., 2008), research indicates that a person who experiences a stressful or traumatic event will need to search and find meaning to foster adaptation to the stressor (Davis, Wortman, Lehman, & Silver, 2000; Park & Ai, 2006). These important elements are missing in most meaning making scales apart from the Meaning in Life Questionnaire (MLQ). Therefore, the MLQ was chosen for this study.

The MLQ consists of two subscales measuring searching for meaning in life (e.g. "I am seeking a purpose or mission for my life") and the presence of meaning in life (e.g. "my life has a clear sense of purpose") (see appendix 13). Each subscale contains five items rated from 1 (Absolutely True) to 7 (Absolutely Untrue). Higher scores indicate a greater search for meaning and presence of meaning in life. The item "My life has no clear purpose" must be reverse-coded prior to aggregating the individual scale items, such that high scores refer to a lower presence meaning in life (Steger & Kashdan, 2007).

The psychometric properties of the MLQ were tested by studies. It has shown a good reliability, stability as well as a robust structural validity. Steger and Kashdan (2007) found that the internal consistency Cronbach's α values of the subscales, MLQ-Presence and MLQ-Search, were .83 and .84 respectively.

5.3 Procedure

The procedures of this study were more or less identical to the first quantitative study.

5.3.1 Translation of the questionnaires and pilot study

Most of the questionnaires were developed in Western countries and they may not have good reliability when directly applied in other societies. Therefore, translation was carried out and the reliability of the inventories examined. The questionnaires were translated and revised into Arabic. The purpose of this translation was to create an Arabic version of the questionnaire from the original version of the questionnaire, verified as reliable, therefore establishing a special inventory for scientific research suitable for use in Iraq.

Every effort was made to ensure that the original meaning intended by each item be retained in the Arabic translation. And therefore, the questionnaires were first translated by the researcher and two Iraqi professors fluent in English, and then, after some lengthy discussion with these two professors independently, a single version for each questionnaire was created. The second step was to discuss the drafts with an Iraqi psychologist. At the same time, the opinion of 10 participants who had been exposed to bombing was obtained. The educational background of these ten participants was University level (5 participants), secondary level (3) or primary level (2). According to the suggestions of all these people, items were revised for the Arabic version.

It should be mentioned that the original items of some questionnaires were adapted to fit the situation and cultural background in Iraq. The original word ‘partner’ in CRI, item 3 was revised to ‘husband/wife’ (see appendix 12). The reason for revising this item is that, unlike most Western countries, the relationship between a man and a woman in communities like Iraq must be husband and wife. The original words such as church, bible and temple in BARCS were also removed and replaced

with the words "Mosque" and "Quran" (see appendix 11). The reason for revising these items is that all the participants of this study are Muslims. While reading the Bible and going to church is a predominant religious activity in Western countries, reading the Quran and going to the mosque is a common religious activity in the Muslim community. The original item 28 of MFODS was also adopted to be fit with the participants of this study. It was changed to 'It does not matter where I will be buried' (see appendix10). The reason for this changing is that burial of dead people in Islamic societies is generally without a coffin. Keeping the original items would have been confusing. These revisions are essential and typical of cross-cultural adaptations made in other translations.

Back translation was also employed for ratification by another person who speaks Arabic as first language and is fluent in English. The interpreter had lived in English speaking countries for several years and worked as a professional interpreter. All items were then discussed, with more emphasis on items where discrepancies were noted, until a uniform interpretation or an example of a difficult word or question was agreed upon (or both). Any discrepancies were then discussed and resolved by joint agreement. According to the results of a pre-investigation using the second translation, items were revised and collated to form the Arabic version.

A pilot study was then conducted to confirm the clarity and ease of comprehension of the questionnaires. Thirty participants (m=20, f=10) from the bombing group and 14 (m=5, f=9) from the control group were involved in the study. Their answers and comments were analysed. This initial study triggered further changes, in terms of the instructions, and demonstrated good content validity in so for as all the questionnaires were clear and understandable.

5.3.2 Assessment

5.3.2.1 First time assessment (T1)

Once eligible participants were identified, contact was made to invite them to take part in the study. The purpose of the study was explained to them and a preliminary interview held, using the study information sheet. Participants were advised to ask any question regarding the study before proceeding any further. Participants were invited to contact the study investigator should they have queries about the study or concerns about their personal well-being. They were also informed that they could withdraw from the study at any point, the data of study was anonymous and personally identifying information was not sought. Although participants were informed that participation in the study might be an exacting emotional experience, the study was considered to involve no more than minimal risk to participants' well-being.

Those who agreed to participate were asked to sign the consent form. Following their consent, participants were assessed using the Mini-Mental State Examination (MMSE) to confirm cognitive functioning. Those who had a score below the cut-off indicating cognitive impairment would have been excluded from the study. However, the results of this initial test excluded no one based on the MMSE cut-off. Participants then responded to a request for information concerning demographic variables, including gender, age, marital status, ethnicity, occupation, education, income level and whether they had ever suffered from any major life illnesses. Participants were given 5,000 Iraqi Dinar (about $4) for participation at T1 and 6,000 Iraqi Dinar (about $5) for participation at T2 as a token of appreciation of their time and effort. It was necessary to reward the participants because this is the custom in undertaking research in Iraq. It would have not been easy to recruit participants without such a reward.

After the initial and cognitive impairment assessments, participants were invited again and given a series of seven self-report questionnaires, as well as a slip of paper to give consent to a follow-up in approximately five months. More than two thirds of the participants (119, 64.3%) were assessed in a private hall belonging to Al-Anbar University, whereas 66 (35.7%) used a hall belonging to the Ministry of Health.

5.3.2.2 Second time assessment (T2)

On average, the follow up assessment was conducted 118 day after the first assessment. Participants were assessed at the same places of the first assessment. On average 4 months after the first assessment, reminder emails were sent out and phone calls made by the investigator and the administrators at the MoH, RGH and FGH to the participants to see if they still wished to carry on with the follow up of the study. Those who agreed to participate in the follow up entered their responses in the text of the email and sent it back to the investigator. Approximately 3 weeks after the initial call, 114 participants (61%) sent their consent via text message and 62 (33.5%) via e-mail. Four people (m=1, f=3) declined to participate in the research, 2 men died, and three (m=1, f= 2) had specified that they did not want to be contacted at follow up. A total of 176 participants were therefore recruited into the second assessment. On average, the follow up assessment was conducted 118 days after the first assessment. Participants were assessed at the same places as the first assessment.

Similar to the first assessment, participants were assessed using the PDS, GHQ-28 and RSQ-30. They were also asked to report if they had experienced any further bombing attack/s during the period between the first and second time assessment. All the participants reported that they had experienced no further bombing attack.

5.3.3 Reliability of the questionnaires

The reliability of the questionnaires was also covered in this study. The questionnaires which were translated and validated in study 2 (e.g. PDS, GHQ-28 and RSQ-30) will be used in the present study. For those questionnaires, however, which had not been validated (e.g. MFODS, CRI, BARCS and MLQ), reliability was carried out. Cronbach's αs, based on the sample of the current study, showed that the questionnaires had sound psychometric properties (see table 5.1).

Table 5.1 Cronbach's *α* for the inventories

Predictor measures	*Cronbach's Alpha α* *n= 185*
CRI- Logical analysis (LA)	.78
CRI- Positive appraisal (PA)	.69
CRI- Seeking support (SS)	.71
CRI- Problem-solving (PS)	.68
CRI- Cognitive avoidance (CA)	.69
CRI- Acceptance (A)	.71
CRI- Alternative rewards (AR)	.72
CRI- Emotional discharge (ED)	.68
CRI Total Score	.72
BARCS **Total Score**	.91
MFODS **Total Score**	.92
MLQ-Search	.86
MLQ-Presence	.87

5.4 Data analysis

SPSS 19 was used to analyze the data of this study. Prior to analysis, the data were examined for assumptions of multivariate analysis. Following exploration and transformation, assumptions relating to multivariate normality, linearity and homoscedasticity were met.

- Descriptive statistics were used to describe the demographic characteristics and the bombing experience.
- *t*-test and chi-square were used to compare differences between the bombing and control groups in terms of demographic characteristics, past life-threatening events, co-morbidity, attachment styles, religious coping, coping strategies, death anxiety and meaning in life.
- Paired *t*-tests were performed to compare rates of trajectory of PTSD, psychiatric co-morbidity and attachment patterns over time.
- Spearman's non-parametric correlations were used to establish the association between the predictor variables and the outcome measures. Statistical significance was set at $p<.05$.
- Hierarchical multiple regression analyses were performed to find the extent that predictor variables could predict outcomes significantly.
- The effect sizes of *t*-test and multiple regressions were calculated to find out how big the effect is. Cohen's (1988) suggested widely accepted about what constitutes a large or small effect. The effect sizes for this study were $r= .10$ is a small effect and explains 1% of the total variance, $r= .30$ is a medium effect and explains 9% of the variance, and $r= .50$ is a large effect and accounts for 25% of the variance. For the regression, the effect sizes used were as follows: small ($f^2= .02$), medium ($f^2= .15$) and large ($f^2= .35$).
- The asymptotic and resampling procedure was used to analyse the meditational relationships between predictor and outcome variables. These

strategies have been recommended by recent literature on statistical analysis for psychological research (Preacher & Hayes, 2008).

5.5 RESULTS

This section begins by describing the participants' demographic variables, followed by incidence of post-bombing PTSD, its trajectory over time, past life-threatening events, psychiatric co-morbidity, its trajectory, attachment styles, the distribution and the trajectory of the participants on attachment patterns, predictors of post-bombing PTSD and psychiatric co-morbidity, and investigating the proposed mediator variables.

5.5.1 Basic demography

5.5.1.1 Participants

One-hundred and eighty five participants who had been exposed to bombing were recruited for this study from the following sources: MoH (n=97, 52.4%), RGH (n=36, 19.5%) and FGH (n=52, 28.1%). The participants ranged in age from 18 to 53 years (M=30.93, SD=8.92). The sample was distributed almost equally between males and females with 91 (49.2%) males and 94 (50.8%) females. Over half were married, less than 40% single, and almost same number were divorced and widowed (see Table 5.2). Participants' reported level of education as follows: the majority had obtained education up to secondary level, less than one third had obtained education up to primary, almost a quarter had earned a bachelor degree (44, 23.8%) and the rest had either a master degree (11, 5.9%)or a PhD or advanced professional degree (5, 2.7%).

In terms of income level and occupation, less than half reported low and mid income. However, the income of just over 15% was high. Occupations included merchants (nearly 2%), managers (almost 4%), university lecturers and engineers

(just over 10%), public servants (13%), students and educators (just over 16%), nurses and health staff (5%), grocers and salesmen (8%), building labours (nearly 3%), factory workers (over 2 %), self-employed (9%) and cleaners (nearly 5%). Otherwise, 9% were housewives and a little over 13% unemployed.

The participants were chosen from different regions: Baghdad (29.1%, 54); Anbar (42.7%, 79); Saladin (15.1%, 28); and Karbala (12.9%, 24). The minority of the participants were Kurdish, whereas more than 90% were Arab. All the participants categorised themselves as Muslims.

Over one quarter of the participants had major illnesses. The rest however, did not suffer any major life illness before the bombing. Of the 27%, 18% and 7% had 1 and 2 major life illnesses respectively. The most prevalent illness was diabetes (6%), followed by different types of allergies (5%). Nearly 4% had heart attacks and ulcers alike. Over three percent had had hemorrhoids and rheumatic fever. The rest (over 1%) had had hypercalciuria. The medical files of the data resources confirmed this information.

To compare age, gender, marital status, and other demographic variables between the bombing and control groups, χ^2 and *t*-test analyses were performed. The results indicated that neither gender [χ^2 (1) =.004, *P*>.05], marital status [χ^2 (1) =.194, *P*>.05], income level [χ^2 (1) =.203, *P*>.05], educational level [χ^2 (1) =.611, *ns*], nor ethnicity [χ^2 (1) =2.471, *ns*] yielded significant differences between the two groups. The bombing group also showed no significant differences in age [*t* (361) =.248, *P*>.05] or cognitive functioning [*t* (361) =1.73, *ns*] than the control group. People who had experienced bombing also reported no significant traumatic events during their lifetimes than the control group [*t* (50) =1.69, *ns*]. However, there was a significant difference in major life illnesses (χ^2 (1) =4.73, p<.05) between the two groups (see Table 5.2).

Table 5.2 Basic demographic characteristics of participants

	Bombing Group		Control Group			
	Mean	**SD**	**Mean**	**SD**	χ^2	***t***
Age	30.93	8.92	30.70	8.97	-----	.248
Cognitive impairment	26.69	1.28	26.45	1.37	-----	1.73
Past life-threatening event	1.47	.70	1.16	.38	-----	1.69
Onset of bombing (month)	1.58	.85	-----	-----	-----	-----
Gender	**N**	**%**	**N**	**%**		
M	91	49.2	87	48.9	.004	-----
F	94	50.8	91	51.1		
Marital status						
Single	73	39.5	78	43.8		
Married	103	55.7	95	53.4	.194	-----
Divorced	5	2.7	3	1.7		
Widowed	4	2.2	2	1.1		
Income						
Low income	76	41.1	69	38.8		
Medium income	80	43.2	83	46.6	.203	-----
High income	29	15.7	26	14.6		
Education Level						
Primary	53	28.6	44	24.7		
Secondary	72	38.9	83	46.6	.611	-----
University	60	32.4	51	28.7		
Ethnicity						
Arab	167	90.3	151	84.8	2.471	-----
Kurdish	18	9.7	27	15.2		
Major life illnesses	**YES**	**NO**	**YES**	**NO**		
	N %	N %	N %	N %		
	51 27.6	134 72.4	32 17.8	146 82.2	4.73*	-----

Note: For the present and further analysis, dummy variables were coded as follows. Gender: 1=male, 2= female; marital status: 1= single/divorced/widowed, 2= married; income: 1= low income, 2= mid income/high income; educational level: 1= university, 2= primary/secondary; ethnicity: 1= Arab, 2= Kurdish; major life illness: 1= yes, 0= no.

*p< .05, **p<.001

5.5.2 The subjective experience of the bombing

Considerable research has shown that there is a significant association between the perceived threat of a dangerous event and the exhibiting of stress symptoms (Becker-Blease & Freyd, 2005; Chung et al., 2004; Miguel-Tobal et al., 2006; North et al., 1999). It is therefore important to analyse and make sense of the initial responses of the participants and identify the severity of the experience. The initial responses were divided into 3 stages, before, during and after the bombing (see Table 5.3).

Prior to the bombing, the menacing hazard of terrorist attacks had touched the lives of countless citizens. Just over a third of the participants thought that they would be involved in a bombing one day and nearly 66% knew someone who had died or sustained an injury in a bombing.

Table 5.3 The subjective experience of the bombing

	YES		NO	
	N	%	N	%
Before the bombing				
Did you anticipate that you would be involved in a bombing attack one day?	114	61.6	71	38.4
Did you know anyone who died or sustained an injury in a bombing attack?	122	65.9	63	34.1
During the bombing				
Were you with anyone you know when the bomb exploded?	110	59.5	75	40.5
Did anyone you know die in the bombing?	74	40.0	111	60.0
Did anyone you know sustain an injury during the bombing?	97	52.4	88	47.6
Were you injured during the attack?	92	49.7	93	50.3
Were you covered with dark and dusty smoke from the bombing?	107	57.8	78	42.2
Were you unconscious during the attack?	26	14.1	159	85.9
Did you feel that you were going to die during the attack?	119	64.3	66	35.7
Did you see people exploded into pieces?	65	35.1	120	64.9

(Continued on next page)

Did you see body remains?	79	42.7	106	57.3
Did you see people severely injured?	126	68.1	59	31.9
	Mean		**SD**	
Was the injury painful?	1.64		.89	
Did you feel confused?	1.72		.87	
Did you feel you lost control of yourself?	1.44		.88	
Did you feel isolated and alone during the attack?	1.49		.92	
Were you horrified by what you saw during the attack?	1.90		.92	
	YES		**NO**	
After the bombing	**N**	**%**	**N**	**%**
Did you try to rescue other victims after the bombing?	20	10.8	165	89.2
Were you taken to a hospital?	98	53	87	47
Did you leave the site of bombing without seeking medical care?	82	44.3	103	55.7
	Mean		**SD**	
Are you angry about what happened to you?	2.10		.89	
Are you worried that you might experience another bombing?	1.72		.84	
Do you think your life is in danger?	1.89		.89	
Do you deliberately stay at home and avoid going out in case you experience another bombing?	1.51		1.01	
Do you feel that the bombing attack have changed you as a person?	1.64		.91	

During the bombing, for those directly exposed, just less than half were injured on various parts of the body (see Table 5.4), and more than two thirds thought they were going to die. Severity of injuries was described on average as moderately painful. Subsequently, they were taken to hospital for medical intervention.

Table 5.4 Number of people who got injured during the bombing

	N	%
Abdomen	8	4.3
Legs, including amputation	11	5.9
Hands, including amputations	8	4.3
Head	10	5.4
Thighs	9	4.9
Below the knee	11	5.9
Back	7	3.8
Shoulders	8	4.3
Slightly injuries of the face	9	4.9
Injuries of the eyes	6	3.2
Scratches	5	2.7

Being in a bombing attack is a terrifying experience (North et al., 1999). One sees a variety of repulsive and unpleasant scenes. This is exactly what happened to over one third of the participants who saw hideous scenes during the bombing, such as people exploded to pieces and body remains. In addition, more than two thirds of them saw people severely injured and nearly two thirds of the participants expressed their horror when they got covered with dark, dusty smoke and thought they were going to die. Participants, on average, were moderately confused, isolated, lost control of themselves and were horrified by what they saw. Since they were completely conscious, they were mostly trying to escape, without thinking of rescuing or giving support to other injured people, apart from very few (around 10%).

Regarding what happened after the bombing, the cohort moderately thought that their life was in danger and they might be the target of another bombing. Therefore, they deliberately stayed at home and avoided going out. In that sense, they moderately felt that the experience had changed their personality and they were very angry about what had happened to them.

In analysing the severity of the bombing experience, the 185 participants were classified into low, moderate and severe exposure groups. The division and

suggestion of formulating comparison groups largely follows other studies (e.g. Chung et al., 2004). The results showed that the low severity group consisted of 23.8% of the cohort (n=44), the moderate severity exposure group was 65.4% (n=121) and the severe exposure group was 10.8% (n=20). The criteria for classifying the intensity of the bombing experience were the same as that used in classifying participants in study 2 (see section 4.5.2). For the current analysis, the low and medium exposure groups have been jointly combined.

5.5.3 Post-bombing PTSD

In order to pursue this aim, participants were categorized as full PTSD, partial PTSD and no PTSD, using the same criteria as Foa et al. (1997). This definition was selected as it is the least restrictive in the literature (Gudmundsdottir & Beck, 2004). In order to determine if an individual endorsed a symptom, the frequency rating had to be 1 or higher intrusion, two hyperarousal, and the intensity rating had to be 3 or higher avoidance. This categorization resulted in just over 15% of the participants, at T1, in the no PTSD group (meeting the screening criteria on none of the symptoms clusters), over half in the partial PTSD group (meeting the screening criteria in one and/or two of the three symptoms clusters), and just less than one third in the full PTSD group (meeting full screening criteria) (see Table 5.5).

Table 5.5 Screening criteria of post-bombing PTSD and mean scores at T1 and T2

	NO PTSD		Partial PTSD		Full PTSD		Intrusion		Avoidance		Hyperarousal	
	N	**%**	**N**	**%**	**N**	**%**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**
PDS T1 (185)	33	17.8	97	52.4	55	29.7	6.52	2.86	9.96	3.09	6.69	2.77
PDS T2 (176)	52	28.1	91	49.2	33	17.8	5.55	2.73	8.28	3.02	5.14	2.34

Missing data=9

PTSD symptoms manifested differently at various levels after the bombing. Almost the same to the second study, participants reported avoidance symptom as the greatest screening sensitivity, in that following the bombing experience, less than half (43%) were trying to avoid activities, people, or places that could remind them of the bombing. As well as that, less than one third (28%) were avoiding have feelings about the bombing, thinking about it or talk about it. Moreover, nearly one quarter (23%) had felt emotionally numb and being unable to cry.

Participants reported hyperarousal as the next most common symptoms in that over half (54%) found themselves having fits of anger and more than one third (32%) were overly alert. The rest (9%) had trouble concentrating and a very small proportion (5%) felt jumpy or easily startled.

The less frequently endorsed symptoms among participants meeting screening criteria for current PTSD was intrusion. They displayed some degree of intrusive recollections symptoms, in that nearly two thirds (57%) still had upsetting thoughts and images about the bombing, over one third (32%) had nightmares about it, and a very small proportion (less than 5%) had relived the bombing, feeling as if it was happening again and experienced some physical reactions when they recalled the bombing. No PTSD cases with symptoms beginning more than 6 months after the bombing were found, demonstrating, per DSM-IV-TR definition, no delayed-onset PTSD. The average time since the participants' exposure to the bombing was approximately 2 months ranging from 1 to 5 months with a mean of 1.58 month (SD=.85). At the follow up approximately five months after the first assessment, PDS showed that over two thirds of the participants met the PTSD screening criteria, in which less than half and over 17% met the partial and full PTSD symptoms criteria respectively, whereas nearly one third were screened with no PTSD. The symptoms level did change slightly between the two time assessments. Participants reported high scores in avoidance symptoms, followed by intrusive thoughts, with the lowest

scores in hyperarousal symptoms (see Table 5.5). None of the participants had experienced a further bombing attack between the two time assessments.

5.5.4 Trajectory of post-bombing PTSD over time

Regarding the trajectory of post-bombing PTSD, only 5 participants with partial PTSD at T1 had dropped out at the follow up. Among the 55 participants who were screened with full PTSD at T1, 53 showed willingness to participate in the follow up assessment. Thirty three people who did not develop post-bombing PTSD at T1 were contacted. All but two of them agreed to take place in the second assessment.

Of the 31 participants who were screened with no PTSD at T1, the majority remained in the same category and an equal proportion of participants (3%) changed to partial and full PTSD symptoms. Of the 92 participants who were screened with partial PTSD at assessment time 1, the majority (over 71%) remained in the same category and less than a quarter had achieved full remission (defined as having no PTSD symptoms). The minority, however, changed to full PTSD screening. Of the 53 participants who were screened with full PTSD at T1, almost the same proportion remained in the same category and changed to the partial PTSD, with the rest changing to full remission of PTSD symptoms (see Table 5.6).

Table 5.6 Trajectory of PTSD symptoms over time

PTSD T1 (185)							PTSD T2 (176)					
No PTSD		Partial PTSD		Full PTSD			No PTSD		Partial PTSD		Full PTSD	
N	**%**	**N**	**%**	**N**	**%**		**N**	**%**	**N**	**%**	**N**	**%**
33	17.8	97	52.4	55	29.7	No PTSD (n=52)	29	16.4	19	10.7	4	2.2
						Partial PTSD (n=91)	1	.5	66	37.5	24	13.6
						Full PTSD (n=33)	1	.5	7	3.97	25	14.2

In order to test whether the symptoms level had significantly declined over time when mean symptoms of each outcome (contingence scores) were calculated, a *t* test was conducted within-subject. The results indicated a significant decrease in levels of PTSD consistently: intrusion [*t* (175) =6.15, *p*<.001, *r*=.42], avoidance [*t* (175) =8.97, *p*<.001, *r*=.56] and hyperarousal [*t* (175) =9.13, *p*<.001, *r*=.57].

5.5.5 Involvement of past life-threatening events in the bombing experience

It was aimed to report the PTSD symptoms after dangerous life experience/s to: 1) estimate the risk of developing PTSD from selected previous life threatening events, 2) explore whether previous exposure to trauma declines over time. To achieve these two aims, the history of past potentially traumatic events, as specified in DSM-IV, was elicited. PTSD symptoms that followed a selected event from the list of events reported by each respondent were then assessed at T1 and T2.

Of the 185 participants at time 1, thirty-four reported having experienced at least one dangerous event during their lifetime. In particular, over half (19) identified one event; just over one quarter (9) identified two dangerous events, whereas only 14.7% (n=5) and 2.94% (n=1) endorsed having 3 and 4 dangerous life events respectively.

As in study 1, the sudden and unexpected death of someone has been reported with the highest rates among the past potential traumatic events, followed by serious accident. Almost the same proportion of participants reported child physical assault and life-threatening illness. A wide variety of events such as sudden and violent death, imprisonment, and adult sexual assault were all just less than 3%. Other commonly endorsed events included adult physical assault (3.7%), and a small percentage (just less than 2%), were involved in a combat experience (see Table 5.7). Of the 176 individuals at time 2, no further dangerous events had taken place since time assessments 1. Therefore, previous life-threatening event at time 2 was excluded from the analysis.

Table 5.7 Life-threatening events for both bombing and control group

Past life-threatening event	Bombing group T1				Control group			
	YES		**NO**		**YES**		**NO**	
	N	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Serious accident	14	7.6	20	10.8	3	1.7	175	98.3
Natural disaster	-----	-----	-----	-----	-----	-----	-----	-----
Adult physical assault	7	3.8	27	14.6	-----	-----	-----	-----
Child physical assault	5	2.7	29	15.7	-----	-----	-----	-----
Adult sexual assault	1	.5	33	17.8	-----	-----	-----	-----
Child sexual assault	-----	-----	-----	-----	-----	-----	-----	-----
Combat	3	1.6	31	16.8	-----	-----	-----	-----
Imprisonment	1	.5	33	17.8	-----	-----	-----	-----
Torture	-----	-----	-----	-----	-----	-----	-----	-----
Captivity	-----	-----	-----	-----	-----	-----	-----	-----
Life-threatening illnesses	4	2.2	30	16.2	4	2.2	174	97.8
Sudden, violet death	2	1.1	32	17.3	2	1.1	176	98.9
Sudden, unexpected death	19	10.3	15	8.1	9	5.1	169	94.9
Serious injury	-----	-----	-----	-----	-----	-----	-----	-----
Exposure to toxic	-----	-----	-----	-----	-----	-----	-----	-----
Other traumatic	-----	-----	-----	-----	3	1.7	175	98.3

Compare with them, the bombing group experienced significantly more intrusive thoughts [t (50) = 3.74, p<.001, r=.47], avoidance behaviour [t (50) = 4.53, p<.001, r=.54] and hyperarousal [t (50) = 4.18, p<.001, r=.51] than the control group. On the symptoms level, participants of both groups reported avoidance as the most common PDS symptom, followed by intrusive thoughts and hyperarousal (see Table 5.8).

Table 5.8 Mean scores of PTSD from past life-threatening event for bombing and control people

	Bombing group T1 n=34		Control group n=18	
	Mean	**SD**	**Mean**	**SD**
Intrusion	5.35	2.79	2.55	2.03
Avoidance	7.14	3.01	3.50	2.17
Hyperarousal	5.14	2.61	2.33	1.53

$^{*}P< .05, ^{**}P< .001$

5.5.6 Trajectory of psychiatric co-morbidity with post-bombing PTSD over time and comparison between bombing and control group

Table 5.9 shows the means and standard deviations of the GHQ-28 subscales of the bombing and control groups over time. It also shows the scores of the trajectory of psychiatric co-morbidity. Using the GHQ scoring, the results showed that the majority of the participants at T1 (158, 85.4%) who completed the GHQ-28 scored well at or above the cut-off point of 4, which meant that they were considered to be psychiatric cases. This figure dropped to less than 80% at T2.

On the symptoms level, participants reported more anxiety symptoms followed by somatic problems and social dysfunction at T1. This figure had changed slightly at T2, when participants reported more anxiety followed by social dysfunction and somatic problems.

The bombing group at T2 had lower scores than time 1 on all of the items and total scores. In particular, paired *t* test showed that there was a significant decline in somatic problems [*t* (175) =7.13, *p*<.001, *r*=.47], anxiety [*t* (175) =7.25, *p*<.001, *r*=.48], social dysfunction [*t* (175) =5.76, *p*<.001, *r*=.40] and depression symptoms [*t* (175) =4.40, *p*<.001, *r*=.31] over time.

Compared with the control group at both time assessments, the bombing group reported significantly more somatic problems [*t* (361) =17.33, *p*<.001, *r*=.67],

anxiety [*t* (361) =27, *p*<.001, *r*=.82], social dysfunction [*t* (361) =24.62, *p*<.001, *r*=.79] and depression [*t* (361) =22.89, *p*<.001, *r*=.77] than the control group at T1. In other words, the probability of being diagnosed as suffering from a general psychiatric disorder had increased substantially more for participants who had experienced bombing than for participants who had not.

Participants with bombing experience showed that they were still significantly experiencing more somatic problems [*t* (352) =14.43, *p*<.001, *r*=.61], anxiety symptoms [*t* (352) =24.32, *p*<.001, *r*=.79], social dysfunction [*t* (352) =22.31, *p*<.001, *r*=.76] and depression [*t* (352) =22.47, *p*<.001, *r*=.77] than the control group at T2 (see Table 5.9).

Table 5.9 Mean scores of the GHQ-28 of two groups and trajectory of the symptoms over time

	GHQ Bombing group T1 n=185		GHQ Bombing group T2 n=176		Control group		paired *t*-test (T1 v T2)	*t*-test (T1 v Control	*t*-test (T2 v Control)
	Mean	SD	Mean	SD	Mean	SD			
Somatic problems	10.78	4.28	8.97	3.43	4.70	1.92	7.13*	17.33*	14.43*
Anxiety	11.44	4.04	9.62	3.45	2.43	1.88	7.25*	27.00*	24.32*
Social dysfunction	10.65	3.72	9.32	3.28	2.88	2.00	5.76*	24.62*	22.31*
Depression	9.63	4.45	8.78	3.99	1.41	1.78	4.40*	22.89*	22.47*
	N	**%**	**N**	**%**					
Above cut-off point 4	158	85.4	143	77.1					
Less than cut-off point 4	27	14.6	33	17.8					

*$P< .05$, **$P< .001$

5.5.7 Distribution and trajectory of attachment styles over time

The predominant attachment styles used by participants was calculated by selecting the RSQ category with the highest mean rating (Muller et al., 2000). At T1, the fearful style was predominant for 46.4% (n=86) of the participants. The next most common style was secure attachment, which 26.4% (n= 49) of the participants endorsed, followed by dismissing (20%, n=37) and preoccupied (7%, n= 13). In total, 73.4% of the participants endorsed one of the three insecure attachment styles (fearful, preoccupied or dismissing), indicating that the attachment styles within this sample were predominantly insecure (see Table 5.10).

At T2, the fearful style was still predominant for 42% (n=79) of participants. The next most common style, secure, was endorsed by 30% (n=56) of the participants followed by dismissing (17%, n=33) and preoccupied 4% (n=8) with 9 missing data. In total, 64.8% of the participants endorsed one of the three insecure attachment styles.

Regarding the trajectory of the attachment styles, table 5.10 shows that of the 49 who were found to be securely attached at T1, the majority remained in the same category and very little changed to the fearful pattern. The same proportion of individuals, less than 5%, who endorsed secure attachment had changed to preoccupied and dismissing at T2. Similar to the secure pattern, almost three quarters of the participants who were exhibited fearful style at T1 remained the same and an almost equal proportion reported changes to secure (8) and dismissing (11). Very few of the people who adopted the fearful pattern changed to the preoccupied style. Of the 13 who were rated as preoccupied, there was an almost equal proportion who remained in the same category and changed to the other three patterns. Of the 37 people who were initially classified under the dismissing state, only 1 changed to preoccupied, and less than one third and one quarter changed to fearful and secure respectively, while the majority kept the same style of attachment.

Table 5.10 Trajectory of attachment styles over time

Attachment styles T1 n=185	Attachment Styles T2 n=176							
	Secure		Fearful		Preoccupied		Dismissing	
	N	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Secure (n=49)	37	21.02	8	4.54	4	2.27	7	3.97
Fearful (n=86)	4	2.27	61	34.65	3	1.70	11	6.25
Preoccupied (n=13)	2	1.13	2	1.13	3	1.70	1	.56
Dismissing n=(37)	2	1.13	11	6.25	3	1.70	17	9.65

Missing data=9

Regarding the time course of the attachment styles, results showed that there was an increase in the number of participants who exhibited secure attachment, whereas there was decrease in insecure styles over time. In particular, *t* test showed that there was a significant decline over time in fearful [*t* (175) =5.59, p<.001, *r*=.39], preoccupied [*t* (175) =8.74, p<.001, *r*=.55] and dismissing patterns [*t* (175) =6.85, p<.001, *r*=.46], whereas secure attachment [*t* (175) = 8.01, p<.001, *r*=.52] increased significantly over time.

In comparison with the control group, people who had experienced bombing showed scores significantly higher than the control on fearful [*t* (361) =15.41, *p*<.001, *r*=.63], preoccupied [*t* (361) =11.53, *p*<.001, *r*=.52] and dismissing attachment styles [*t* (361) =14.44, *p*<.001, *r*=.60], whereas the control group had significantly higher scores [*t* (361) =-25.36, *p*<.001, *r*=.80] than the bombing group on the secure pattern.

5.5.8 How did people cope with the experience of bombing?

With regard to the strategies participants used to cope with the stress that they experienced and that led to life adjustment, table 5.11 shows that the participants used both cognitive and behavioural coping strategies to different degrees. On average, participants used cognitive avoidance and acceptance strategies the most in that, for example, they tried not to think about the bombing

(70%), tried to deny how serious the bombing was (64%), tried to make themselves comfortable by accepting the situation (63%) and believed that time could make a difference (59%). Participants also relied on behavioural avoidance strategies to tolerate their experience. For example, they turned to work and other activities (35%), and kept away from people (59%). They also made an effort to seek assistance, for example, by talking to people such as a spouse or relatives (65%) or friends (52%) about their experience. Otherwise, they used a certain level of positive appraisal and tried to see the good side of the situation (33%), used the planful problem solving strategy and tried to find a personal meaning in the bombing (26%), and anticipated the new demands that will be placed on them (18%).

Table 5.11 The mean and standard deviation of the CRI

Coping strategy			Bombing group n= 185			
	Mean	SD	Mean	SD	Mean	SD
Cognitive Approach Coping	16.11	5.05	LA		PA	
			7.09	2.37	9.02	3.50
Cognitive Avoidance Coping	23.66	6.74	CA		A	
			11.84	4.16	11.81	3.11
Behavioural Approach Coping	16.24	6.81	SS		PS	
			9.03	3.71	7.21	3.60
Behavioural Avoidance Coping	17.34	4.15	AR		ED	
			7.79	3.51	7.70	2.13

Note: **LA**=Logical Analysis; **PA**=Positive Appraisal; **CA**=Cognitive Avoidance; **A**= Acceptance; **SS**=Seeking Support; **PS**=; Problem Solving; **AR**=Alternative Rewards; **ED**= Emotional Discharge.

5.5.9 Specificity analyses of the predictors between bombing and control group

Table 5.12 shows the means and standard deviations of the MLQ and MFODS of both the bombing and control groups. Results demonstrated that the bombing group had less meaning in their lives than the control group. More specifically, the bombing group reported that they were searching for meaning much more, by, as an example, looking for things that would make their lives meaningful and significant. However, the control group people seemed to have more present meaning in life than the bombing group. For example, their lives seemed to be comprehensible and full of purpose, involving a clear sense of life's meaning and a good sense of what would make the life meaningful.

Regarding death anxiety, it was found that the bombing group experienced death anxiety much more than the control, indicating that an experience of extreme danger such as a bombing attack, even if it passes quickly, can evoke deep fears and anxieties in people, which may relate to their most fundamental concerns about living.

To make a more precise comparison, the two subscales of meaning in life and total score of death anxiety for both two groups (bombing vs. control) were evaluated. *t*-test showed that the bombing group scored significantly higher in death anxiety (t=-5.97, df= 361, P<.001) and the search for meaning in life (t=15.69, df= 361, P<.001) than the control group. However, the control group scored significantly higher in present meaning in life (t=-30.34, df= 361, P< .001) than the bombing group.

Table 5.12 Means and standard deviations of the predictors among bombing and control group

	Bombing group		Control group	
	Mean	SD	Mean	SD
MLQ- P	11.03	4.53	27.30	1.88
MLQ-S	21.74	5.95	13.84	3.15
Religious Coping	22.25	9.71	-----	-----
Death Anxiety	144.87	26.70	159.88	20.59

MLQ-P=Presence Meaning in Life; **MLQ-S**=Searching for Meaning in Life.

5.5.10 Correlation analysis

Correlations were computed between the demographic variables (age, ethnicity, marital status, occupation and educational level) and the outcomes (PDS severity and GHQ at time 1 and time 2). Table 5.13 shows that none of the demographic variables were found to be correlated with the outcomes measures at T1 and T2. In consequence, the demographic variables were not controlled for in the regression analysis.

Table 5.13 The correlation relationship between the demographic variables and the outcomes

Variable/measure	1	2	3	4	5	6	7	8	9
PDS T1	-								
GHQ T1	.63**	-							
PDS T2	.73**	.52**	-						
GHQ T2	.52**	.72**	.44**						
Gender	-.04	.03	-.08	-.05					
Age	.04	.08	.02	-.06	.19**	-			
Ethnicity	.02	-.01	-.02	.04	.04	-.08	-		
Marital status	.02	.06	-.02	-.00	.02	.57**	-.07	-	
Occupation	-.01	-.11	-.02	-.08	.16*	.22**	-.13	.25**	-
Educational Level	-.14	-.06	-.06	-.03	.08	.12	-.07	.10	.32**

** $P < .001$ (two-tailed) * $P < .05$ (two-tailed)

To identify the association between the psychological variables and the outcome measures (PDS severity and GHQ-28) at both time assessments, the correlation was performed. Considering the psychological variables, the behavioural avoidance and cognitive approach coping and secure attachment patterns were found not to be correlated with the PDS at T1. Time since the bombing was found not to correlate with the outcomes at both times. Considering the psychological variables, only past life-threatening event was found not significantly correlated with the GHQ at T1 and T2.

Despite the fact that the behavioural avoidance coping and secure attachment styles were not correlated with the PDS at time 2, they were found to be correlated significantly with the GHQ at T2. Finally, time 1 PDS severity was found to correlate significantly with time 2 PDS severity and GHQ at both times, alongside significant correlations between GHQ time 1 and GHQ time 2 (see Table 5.14).

Table 5.14 Correlations (*r*) between PTSD, psychiatric co-morbidity and other bombing-related factors

Variable/measure		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	PDS T1	-																
2	GHQ-28 T1	.63**	-															
3	PDS T2	.73**	.52**	-														
4	GHQ-28 T2	.52**	.72**	.44**	-													
5	SoB	.18*	.17*	.20**	.22**	-												
6	Time since the bombing	-.13	-.10	-.11	-.08	.02	-											
7	Past life-threatening event	.44**	.20	.51**	.32	.13	.09	-										
8	RSQ- IA	.44**	.54**	.43**	.51**	.08	-.08	.08	.20	-								
9	RSQ- SA	-.02	-.18*	-.01	-.21**	.01	.01	-.08	-.06	-.26**	-							
10	Death Anxiety	.47**	.54**	.45**	.54**	.01	-.06	.29	.35*	.51**	-.13	-						
11	CRI- CA	-.05	-.22**	-.14*	-.14*	-.07	.11	.33	.17	-.18*	.20**	-.30**	-					
12	CRI-CAV	.42**	.51**	.38**	.47**	.12	-.07	.44**	.51**	.47**	-.20**	.50**	-.31**	-				
13	CRI-BA	-.20**	-.39**	-.23**	-.31**	-.06	.06	.18	-.10	-.40**	.35**	-.48**	.68**	-.60**	-			
14	CRI-BAV	-.11	-.21**	-.04	-.16*	.00	.08	.24	.19	-.20**	.27**	-.19**	.40**	-.11	.40**	-		
15	Religious Coping	-.50**	-.46**	-.44**	-.38**	-.15*	.19**	-.26	-.37*	-.32**	.10	-.32**	.21**	-.27**	.33**	.25**	-	
16	MLQ-S	.60**	.56**	.52**	.52**	.09	-.11	.34*	.21	.41**	-.17*	.49**	-.22**	.43**	-.32**	-.27**	-.41**	-
17	MLQ-P	-.61**	-.59**	-.54**	-.58**	-.11	.07	-.31	-.23	-.43**	.11	-.50**	.24**	-.44**	.36**	.25**	.44**	-.87**

Note: For the present analysis, variables were coded as follows. Severity of bombing: 1=not at all, 2= mild/severe; attachment styles: 1= insecure including fearful/dismissing/preoccupied; 2=secure; **SoB**= Severity of the bombing; **LTE**= Life-Threatening Event; **RSQ-IA**= Relationship Scales Questionnaire- insecure attachment, **RSQ-SA**= secure attachment; **CRI-CA**= Coping Responses Inventory -Cognitive Approach; **CRI-CAV**= Cognitive Avoidance; **CRI-BA**= Behavioural Approach; **CRI-BAV**= Behavioural Avoidance; **MLQ-S**= Meaning in Life Questionnaire- search Meaning in life; **MLQ-P**= Meaning in Life Questionnaire- presence meaning in life. $^{**}P < .001$ (two-tailed) $^{*}P < .05$ (two-tailed)

5.5.11 Cross-sectional associations between predictor factors and PTSD and psychiatric co-morbidity

Two hierarchical multiple regressions equations were carried out, in which the severity of PTSD and psychiatric co-morbidity at T1 were dependent variables, whereas past life-threatening event, the two dimensions of attachment styles, total scores of religious coping, the 4 dimensions of coping strategies, total scores of death anxiety and the two dimensions of meaning in life scores were independent variables. Given their significant correlation with the severity of PTSD at T1, the severity of bombing attack and past life-threatening event were entered into blocks 1 and 2, with block 3 containing the two dimensions of attachment styles. Religious coping alongside the 4 dimensions of coping strategies were entered into block 4 of the regression. Finally, total scores of death anxiety and 2 dimensions of meaning in life were entered into step 4, in order to scrutinize changes in the variance of the dependent variables as groups of independent variables were added to the regression equation. No outliers (Mahalanobis ≥3 SD) were detected during the exploration of diagnostics for this analysis.

In terms of PTSD severity at T1, the results of the forward hierarchical multiple regression showed that model 1 explained a significant proportion of the variance [$F(1,183)=6.17$, $P<.05$, $f^2=.03$] and that it explained less than 4% of the variance (adjusted $R^2=.027$). With model 1 controlled for, model 2 did not improve prediction of PTSD severity T1 [$F(1,182)=.02$, $P>.05$, R^2 change $=.000$]. With models 1 and 2 controlled for, model 3 improved prediction of PTSD severity at T1 [$F(2,180)=24.02$, $P<.001$, $f^2=.31$] and that explained just less that 24% of the variance, R^2 change $=.204$ (adjusted $R^2=.220$). With models 1, 2 and 3 controlled for, model 4 improved prediction of PTSD severity at T1 [$F(5,175)=11.81$, $P<.001$, $f^2=.75$] and that explained 43% of the variance (adjusted $R^2=.429$), R^2 change=.193. After controlling for models 1, 2, 3 and 4, the overall model 5 improved prediction of PTSD severity at T1 [$F(3,172)=15.51$, R^2 change=.122, $P<.001$, $f^2=1.22$]. The

overall model 5 explained over 55% of the variance of PTSD severity at T1 (adjusted R^2=.519). Regression coefficients showed that insecure attachment (P<.05), religious coping (P<.001), cognitive avoidance coping strategies (P<.05), searching for meaning in life (P<.05) and death anxiety (P<.05) made a significant contribution to the model (see Table 5.15).

Table 5.15 Regression analyses for predicting Post-bombing PTSD T1

Predictor Variable		*B*	*SE*	*β*
Outcomes:	PDS total score			
Step 1				
	SoB	3.88	1.56	.18*
Step 2				
	SoB	3.89	1.56	.18*
	LTE	.19	1.25	.01
Step 3				
	SoB	3.12	1.40	.14*
	LTE	-.02	1.13	-.00
	IA	.28	.04	.46**
	SA	.28	.20	.09
Step 4				
	SoB	1.62	1.25	.07
	LTE	.43	1.00	.02
	IA	.16	.04	.26**
	SA	.27	.19	.09
	RC	-.26	.04	-.39**
	CRI-CA	.07	.10	.05
	CRI-CAV	.32	.07	.32**
	CRI-BA	.17	.10	.18
	CRI-BAV	-.07	.10	-.04
Step 5				
	SoB	1.71	1.12	.08
	LTE	.09	.91	.00
	IA	.08	.04	.13*

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SA	.21	.17	.07
RC	-.18	.04	-.26**
CRI-CA	.12	.09	.09
CRI-CAV	.17	.07	.17*
CRI-BA	.16	.09	.16
CRI-BAV	.01	.09	.00
DA	.03	.01	.15*
MLQ- P	-.26	.16	-.17
MLQ- S	.23	.12	.21*

*$P < .05$, **$P < .001$

Turning to the association between predictors and severity of psychiatric co-morbidity at T1, the results were the same as the severity of PTSD at T1 in that regression indicated that the severity of the bombing predicted more severity of PTSD. This model explained a significant proportion of the variance [$F(1,183)=5.98$, $P<.05$, $f^2 = .03$] with over 3% explained (adjusted $R^2=.032$). However, when past life-threatening event was included in the next step of the model it did not significantly account for a unique portion of the variance in psychiatric co-morbidity at T1 [$F(1,182)=.26$, $P>.05$] and it also explained over 3% of the variance (adjusted $R^2=.033$), R^2 change =.001, $P>.05$]. With models 1 and 2 controlled for, model 3 improved prediction of the severity of psychiatric co-morbidity at T1, [$F(2,180)=38.78$, $P<.001$, $f^2 =.47$] and that explained less than 33% of the variance (adjusted $R^2=.324$), R^2 change=.291, ($P<.001$). With models 1, 2 and 3 controlled for, model 4 improved prediction of psychiatric co-morbidity severity at T1 [$F(5,175)=9.07$, R^2 change =.139, $P<.001$, $f^2= .86$] and that explained over 46% of the variance (adjusted $R^2=.463$). The overall model 5 improved the prediction of the severity of psychiatric co-morbidity. In this analysis, models 1, 2, 3 and 4 were controlled for at T1 [$F(3,172)=9.84$, R^2 change =.078, $P<.001$, $f^2= 1.18$]. This model explained 55% (adjusted $R^2=.542$) of the variance of the severity of psychiatric co-morbidity at T1. Tests associated with the regression coefficient showed that insecure

attachment (*P*<.05), religious coping (*P*<.05), cognitive avoidance coping strategies (*P*<.05) and death anxiety (*P*<.05) made a significant contribution to the model (see Table 5. 16).

Table 5.16 Hierarchical multiple regressions for predicting post-bombing psychiatric co-morbidity T1

Predictor Variable		*B*	*SEB*	*β*
Outcomes:	Psychiatric co-morbidity total score			
Step 1				
	SoB	7.82	3.19	.17*
Step 2	SoB	7.77	3.20	.17*
	LTE	-1.31	2.56	-.03
Step 3				
	SoB	6.06	2.70	.13
	LTE	-2.57	2.17	-.07
	IA	.64	.07	.52**
	SA	-.42	.39	-.06
Step 4		3.40	2.48	.07
	SoB			
	LTE	-1.35	1.99	-.03
	IA	.38	.08	.31**
	SA	-.16	.38	-.02
	RC	-.36	.08	-.25**
	CRI-CA	-.06	.21	-.02
	CRI-CAV	.62	.15	.30**
	CRI-BA	.12	.19	.06
	CRI-BAV	-.18	.21	-.05
Step 5	SoB	3.70	2.32	.08
	LTE	-2.09	1.88	-.06
	IA	.24	.08	.19*
	SA	-.31	.36	-.05
	RC	-.22	.08	-.16*
	CRI-CA	.00	.20	.00

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CRI-CAV	.39	.15	.19*
CRI-BA	.15	.19	.07
CRI-BAV	-.07	.20	-.02
DA	.09	.03	.18*
MLQ-P	-.54	.33	-.17
MLQ-S	.20	.25	.08

*P< .05, **P< .001

5.5.12 Prospective associations between predictors and PTSD and psychiatric co-morbidity

Two hierarchical multiple regressions were used to examine whether severity of the bombing experience would predict the severity of PTSD and psychiatric co-morbidity at time 2 over and above the effect of the severity of PTSD and psychiatric co-morbidity at time 1, past life-threatening event, attachment styles, religious coping, coping strategies, death anxiety and meaning in life. Five outliers (Mahalanobis ≥3 SD) were detected during the exploration of diagnostics and subsequently removed for this analysis.

Focusing on predicting PTSD severity at time 2, in the first regression, PTSD and psychiatric co-morbidity at T1 as well as the severity of the bombing experience were entered into block 1, with the past life-threatening event total score in the second block and the two dimensions scores of the attachments styles (secure v. insecure) in the third block. The total score of religious coping with the 4 dimensions of the coping strategies scores were entered into the fourth block, with the total score of death anxiety and the two subscales of meaning in life in the fifth block. The severity of PTSD at T2 served as the dependent variable.

The results are reported in table 5.17. For the first step, R^2 =.638 [F(3,167) =100.99, P<.001, f^2= 1.81]. This significant block explained a significant proportion of just under 65%

of the variance. For the second step and after controlling for model 1, block 2 did not improve prediction of PTSD severity at T2 [$F(1,166)=.00$, R^2 change =.000, $P=.985$]. With models 1 and 2 controlled for, model 3 made a significant change from step 2 and improved prediction of PTSD severity at T2 [$F(2,164)=5.37$, R^2 change =.022, $P<.05$, $f^2= 2.00$]. This model explained 67% of the variance (adjusted R^2 =.667). With models 1, 2 and 3 controlled for, neither model 4 [$F(5,159)= .88$, R^2 change=.009, $P=.496$] nor model 5 [$F(3, 156)=1.77$, R^2 change= .011, $P= .154$] improved the prediction of PTSD severity at time 2. Regression coefficients showed that only PTSD at T1 ($P<.001$) and insecure attachment ($P<.01$) did contribute significantly to predicting the severity of PTSD at T2.

Table 5.17 Hierarchical multiple regression for predicting change in post-bombing PTSD T2

Predictor Variable		*B*	*SEB*	*β*
Step 1				
	SoB	.49	.877	.02
	PDS T1	.61	.052	.72**
	GHQ T1	.04	.026	.09
Step 2				
	SoB	.49	.88	.02
	PDS T1	.61	.05	.72**
	GHQ T1	.04	.02	.09
	LTE	.01	.66	.00
Step 3				
	SoB	.56	.85	.03
	PDS T1	.59	.05	.70**
	GHQ T1	.00	.02	.02
	LTE	-.13	.65	-.00
	IA	.09	.02	.17*
	SA	-.05	.12	-.02
Step 4				
	SoB	.40	.86	.02
	PDS T1	.58	.05	.68**

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	GHQ T1	.00	.02	.01
	LTE	.00	.66	.00
	IA	.09	.03	.18*
	SA	-.04	.13	-.01
	RC	-.03	.03	-.06
	CRI-CA	-.08	.07	-.07
	CRI-CAV	-.01	.05	-.01
	CRI-BA	.06	.06	.08
	CRI-BAV	-.07	.08	-.04
Step 5				
	SoB	.57	.87	.03
	PDS T1	.53	.06	.62**
	GHQ T1	-.00	.02	-.01
	LTE	-.23	.67	-.01
	IA	.08	.03	.16*
	SA	-.04	.13	-.01
	RC	-.03	.03	-.05
	CRI-CA	-.04	.07	-.04
	CRI-CAV	-.03	.05	-.04
	CRI-BA	.07	.06	.08
	CRI-BAV	-.07	.08	-.04
	DA	.01	.01	.07
	MLQ-P	.02	.12	.01
	MLQ-S	.12	.09	.12

*$P < .05$, **$P < .001$

With regard to the severity of psychiatric co-morbidity at time 2, 4 outliers were detected and subsequently removed for this analysis. Block 1 explained a significant proportion of the variance [$F(3,168)=85.18$, $P<.001$, $f^2=1.51$] with just over than 60% of the variance explained (adjusted $R^2=.603$). With model 1 controlled for, model 2 [$F(1,67)=.339$, R^2 change =.001, $P=.561$] did not improve prediction of psychiatric co-morbidity severity at T2. With models 1 and 2 controlled for, neither model 3 [$F(2,165)=2.50$, R^2 change =.012,

P<.05], nor model 4 [$F(5,160)=.45$, R^2 change =.005, *P*=.806] improved prediction of psychiatric co-morbidity severity at T2. With models 1, 2, 3 and 4 controlled for, the overall model 5 improved prediction of psychiatric co-morbidity severity at T2 [$F(3,157)=7.82$, R^2 change =.049, *P*<.001, $f^2=2.03$]. The overall model 5 explained less than 70% (adjust $R^2=.671$) of the variance of psychiatric co-morbidity severity at T2. Regression coefficients showed that severity of bombing attack (*P*<.01), GHQ at T1 (*P*<.001), death anxiety (*P*<.01) and presence of meaning in life (*P*<.05) made a significant contribution to the model (see Table 5.18).

Table 5.18 Hierarchical multiple regression analysis for predicting change in psychiatric co-morbidity at T2

Predictor Variable		*B*	*SEB*	*β*
Step 1				
	SoB	4.20	1.65	.12*
	PDS T1	.13	.10	.08
	GHQ T1	.52	.04	.68**
Step 2				
	SoB	4.18	1.65	.12*
	PDS T1	.14	.10	.09
	GHQ T1	.52	.04	.68**
	LTE	-.76	1.31	-.02
Step 3				
	SoB	4.32	1.64	.12*
	PDS T1	.10	.10	.06
	GHQ T1	.48	.05	.62**
	LTE	-.95	1.31	-.03
	IA	.12	.05	.12*
	SA	-.05	.24	-.01
Step 4				
	SoB	4.25	1.67	.12*
	PDS T1	.07	.11	.04

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	GHQ T1	.47	.05	.61**
	LTE	-1.10	1.33	-.04
	IA	.12	.06	.12*
	SA	-.13	.26	-.02
	RC	-.00	.06	-.00
	CRI-CA	-.03	.14	-.01
	CRI-CAV	.14	.11	.09
	CRI-BA	.14	.13	.09
	CRI-BAV	.00	.14	.00
Step 5				
	SoB	5.05	1.59	.15*
	PDS T1	-.08	.11	-.05
	GHQ T1	.41	.05	.54**
	LTE	-1.89	1.28	-.07
	IA	.07	.05	.07
	SA	-.24	.25	-.05
	RC	.00	.06	.00
	CRI-CA	.04	.13	.02
	CRI-CAV	.08	.10	.05
	CRI-BA	.23	.12	.15
	CRI-BAV	.00	.13	.00
	DA	.08	.02	.22*
	MLQ-P	-.57	.22	-.24*
	MLQ-S	-.14	.17	-.07

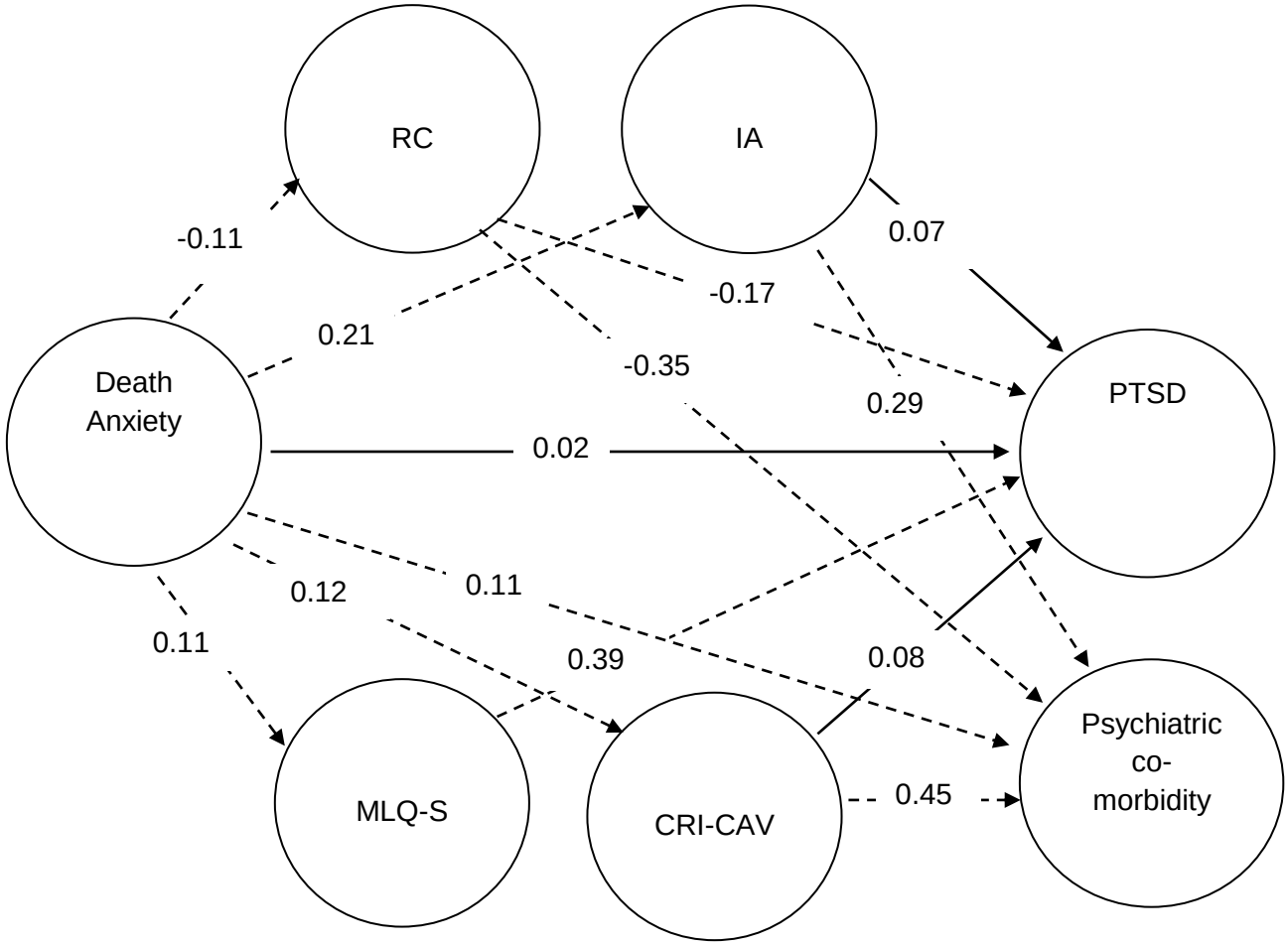
*$P < .05$, **$P < .001$

5.5.13 Mediators between predictors and outcome variables

To test the effect of the predictors on the outcome variables through proposed mediators, all of which were found to be significantly associated with post-bombing PTSD and psychiatric co-morbidity, the asymptotic and resampling strategies were adopted. The effect of the death anxiety on post-bombing PTSD through religious coping, insecure attachemnt patterns, searching for meaning in life and cognitive avoidance coping strategies was firstly tested, and secondly, the effect of death anxiety on psychiatric co-morbidity through the same proposed mediators, apart from searching for meaning in life, was tasted.

The results showed that death anxiety influenced PTSD indirectly through religious coping and searching for meaning in life. Death anxiety was found to affect psychiatric co-morbidity directly and indirectly through religious coping, insecure attachment styles and cognitive avoidance coping (see Fig 5.1).

Figure 5.1 The multiple mediator model for death anxiety on outcomes with significant paths at 5% or better



Dotted arrows denote significant paths

Regarding the relationship between death anxiety and outcomes: Taking all the mediators together, RC, IA, MLQ-S and CRI-CAV mediated the death anxiety on post-bombing PTSD. The total and direct effects of the death anxiety on PTSD were .1190 ($p<.001$) and .0261 ($p>.05$) respectively. The difference between the total and direct effects was the total indirect effect through the mediators with a point estimated as .0929 with a 95% BCa bootstrap CI of .0657 to .1257. In other words, the difference between the total and the direct effect of death anxiety on post-bombing PTSD was different from zero. This was a significant positive indirect effect in that death anxiety led to search for meaning in life, both religious and cognitive avoidance coping and feelig insecure, which in turn led to greater severity of PTSD. Focusing on specific indirect effects, religious coping and searching for meaning in life were significant mediators, since zero for both of them was outside the range of this figuer 95% CI. However, both insecure attachment and cognitive avoidance coping did not contribute to the indirect effect of death anxiety on post-bombing PTSD (see Table 5.19).

With regard to the relationship between death anxiety and psychiatric co-morbidity, the total and direct effects of death anxiety on psychiatric co-morbidity were .2781 ($p<.001$) and .1140 ($p<.05$) respectively. The difference between the total and direct effects was the total indirect effect through the mediator with a point estimated as .1641 with a 95% BCa bootstrap CI of .1145 to .2249. The difference between the total and direct effect of death anxiety was different from zero. It is a significant positive indirect effect, implying that death anxiety led to feeling insecure while trying to rely on both religious and cognitive avoidance to cope, which in turn led to greater severity of psychiatric co-morbidity. Focusing on specific indirect effects, the three variables contributed significantly to the indirect effect of death anxiety on post-bombing psychiatric co-morbidity, since zero for all of them was outside the range of 95% CI (see Table 5.19).

Table 5.19 Effects of death anxiety on outcomes through proposed mediators

					Bootstrapping	
					Percentile 95% CI	
	Data	Boot	Bias	SE	Lower	Upper
	Indirect effects of death anxiety on PTSD through mediators					
Total	.0929	.0918	-.0011	.0154	.0620	.1240
RC	.0209	.0203	-.0006	.0063	.0091	.0339
MLQ-S	.0441	.0439	-.0002	.0109	.0239	.0674
CRI-CAV	.0109	.0108	-.0001	.0085	-.0057	.0279
IA	.0170	.0168	-.0002	.0084	-.0002	.0334
					BC 95% CI	
Total	.0929	.0915	-.0014	.0150	.0675	.1282
RC	.0209	.0203	-.0006	.0062	.0106	.0354
MLQ-S	.0441	.0439	-.0002	.0107	.0258	.0691
CRI-CAV	.0109	.0113	.0003	.0080	-.0042	.0277
IA	.0170	.0161	-.0009	.0086	-.0015	.0372
					BCa 95% CI	
Total	.0929	.0930	.0001	.0149	.0657	.1257
RC	.0209	.0206	-.0003	.0065	.0103	.0369
MLQ-S	.0441	.0443	.0002	.0112	.0234	.0682
CRI-CAV	.0109	.0111	.0001	.0085	-.0068	.0269
IA	.0170	.0171	.0002	.0083	-.0005	.0339
	Indirect effects of death anxiety on psychiatric co-morbidity through mediators					
					Percentile 95% CI	
Total	.1641	.1619	-.0022	.0274	.1107	.2198
RC	.0418	.0406	-.0013	.0117	.0202	.0642
CRI-CAV	.0580	.0574	-.0006	.0201	.0227	.1014
IA	.0643	.0640	-.0003	.0221	.0243	.1068
					BC 95% CI	
Total	.1641	.1637	-.0004	.0274	.1140	.2200
RC	.0418	.0409	-.0009	.0116	.0227	.0709
CRI-CAV	.0580	.0576	-.0004	.0196	.0192	.1008
IA	.0643	.0652	.0009	.0226	.0227	.1102
					BCa 95% CI	
Total	.1641	.1644	.0003	.0286	.1145	.2249
RC	.0418	.0411	-.0007	.0120	.0203	.0702
CRI-CAV	.0580	.0582	.0002	.0198	.0243	.1057
IA	.0643	.0651	.0008	.0229	.0215	.1104

BC= bias corrected; BCa= bias corrected and accelerated

5.6 DISCUSSION

This longitudinal study was conducted for the following aims: Firstly, to verify the prevalence rate and the incidence of PTSD and psychiatric co-morbidity overtime. Secondly, to consider the distribution and the incidence of attachment styles overtime and thirdly to explore the role of some variables (such as past life-threatening event, attachment styles, coping strategies, religious coping, death anxiety and meaning in life) in predicting PTSD and psychiatric co-morbidity. An over-arching intention was to develop a model to describe the interelation of different factors with post-bombing PTSD and psychiatric co-morbidity. The focus of this section will be on the research questions and each hypothesis in turn and finally the limitations of this study.

An overall finding was that the prevelance rate of PTSD and psychiatric comrobidity was relatively constant across studies 2 and 3. The prevelance of PTSD, in study 2 and 3, was 76.6% and 82.1% respectively. The prevelance of psychiatric comrobidity symptoms in both studies was somewhat consistent in that the rate of people who were considered to indicate psychiatric caseness, in studies 2 and 3 was 92.7% and 85.4% respectively. PTSD and psychiatric co-morbidity reactions also seem consistent over time in that all the symptoms showed significant decline.

Regarding the attachment patterns, both studies showed that the majority of the participants (70%) dispaysed insecure attachment styles. Resutls were also consistent in terms of the trajectory of attachment styles over time.

5.6.1 Research question 1

What are the predictors of post-bombing PTSD and psychiatric co-morbidity?

The present result supported the hypothesis in that after controlling for the severity of the bombing, insecure attachment was associated with PTSD and psychiatric co-morbidity. The finding of this study is consistent with previous correlational studies on bombing-related PTSD among high-exposure survivors of the 9/11 attacks (Mikulincer & Shaver, 2007) that have consistently documented the associations between insecure attachment orientations and PTSD. Recently, similar findings have also been reported for a civilian population directly exposed to prolonged attacks in southern Israel (Besser, Neria, & Haynes, 2009). Another study (Mario Mikulincer, Shaver, & Horesh, 2006) who examined the role of attachment patterns in the development of PTSD among Israelis who were exposed to missile attacks during the 2003 US–Iraq war. The findings proposed that people with insecure attachment styles were exhibiting more war-related PTSD symptoms. In the same vein, Besser and Neria (2010) found that insecure attachment was significantly associated with high levels of PTSD in a sample of 135 Israeli students who were evacuated from a university campus located near the Israel–Gaza border in response to increased missile-fire in the area.

The present result also supported previous literature looking at other dangerous experiences such as adults who report the experience of childhood abuse. In a study by Muller et al. (2000), it was found that those who displayed insecure attachment, which represents a negative view of the self, were the most highly associated with posttraumatic stress symptoms. Some previous studies are also consistent with this finding. For example, Alexander et al. (1998) have demonstrated that insecure attachment styles predicted the development of PTSD symptoms. The same association between insecure attachment,

PTSD symptoms and risk factors for a wide range of psychopathologies was reported in the Mikulincer, Florian, & Weller (1993) study.

The finding that insecure attachment was significantly associated with posttraumatic stress symptomatology is supported by attachment and psychopathology theory. Bowlby (1982) postulated that traumatic and dangerous events can yield a negative view of oneself in relation to others. It has also been proposed that individuals whose attachment style is characterised as insecure tend to hold more negative beliefs about the self. In fact, studies e.g. Roberts, Gotlib, & Kassel (1996) found that participants who exhibited insecure attachments had substantially more dysfunctional beliefs than individuals with secure attachments. It can be argued that the negative view of oneself has a detrimental effect on one's psychosocial and emotional development which inhibits and impedes an individual's ability to cope adaptively with life stressors, yielding a greater likelihood of vulnerability to the development posttraumatic stress symptomatology.

It was also demonstrated that individuals with different attachment orientations seem to differ in the strategies they use to deal with stress, dangerous events as well as with their associated symptomatology. Studies found that those scoring high for insecure attachment may be hypervigilant to sources of distress and hypersensitive to the problems they experience, thereby establishing a vulnerability for the development of psychopathology and predispose themselves to experiencing high levels of psychological distress (Besser & Neria, 2010).

Focusing on religious coping, the results supported the hypothesis in that after controlling for the severity of the bombing, religious coping was significantly related to PTSD and psychiatric co-morbidity shortly after the bombing. The more participants adopted religious coping after the bombing, the less they developed severe PTSD symptoms and psychiatric co-morbidity. This finding corresponded to a great deal of literature showed that people tend to adopt religious strategies after bombing to cope with the experience (North et

al., 2005). A causal associations and directionality were also found between the religious coping and alleviation of PTSD symptoms, depression and anxiety among the survivors of the 1998 bombing of the U.S. Embassy in Nairobi, Kenya (North et al., 2011).

It can be argued that religious coping might be particularly effective for PTSD and psychiatric co-morbidity by evoking the feeling of control, connectedness, providing a number of benefits including lower perceived vulnerability, sense of loneliness, isolation and, therefore, lower posttraumatic stress response. Based on this, seeking guidance and support through God have played an essential role, as a protective mechanism, against negative thoughts that emerged as a result of the bombing experience. It is therefore important to recognize that religious coping can play a significant role in tolerating stressors and negative feelings and make survivors more likely to find positive meanings in the experience.

Another explanation for this strong relationship could be due to the fact that religious constructs tend to be vital in defining meaning and significance for many individuals across societies such as Iraq who adopt religion as a way of life, especially in the face of negatively life-altering events.

With regard to the association between coping strategies and outcomes, the results of this study confirmed the hypothesis in that after controlling for the severity of the bombing experience, cognitive avoidance coping strategies predicted more PTSD and psychiatric co-morbid symptoms. This result which is conceptually similar to avoidance of reminders and numbing has been controversial in literature. An early review of the literature presented evidence to suggest that there is a significant association between avoidance coping and increase of PTSD symptoms and mental health outcomes (Littleton et al., 2007; McFarlane, 1992; Vollrath et al., 1998), whereas there is a bulk of studies suggesting that cognitive avoidance strategies are able to reduce and moderate the effects of PTSD symptoms (Krause et al., 2008; Tiet et al., 2006) and minimize reminders of the original stress reactions

(Muldoon & Downes 2007; North et al., 2004; Possemato, Wade, Andersen, & Ouimette, 2010). However, these studies did not differentiate between cognitive and behavioural avoidance coping. The finding of the current study highlights the important distinction between cognitive and behavioural avoidance coping given that these constructs are differentially associated with PTSD symptoms and psychiatric co-morbidity.

This finding is not surprising and specifically supports the cognitive avoidance coping model (Tiet et al., 2006) that hypothesizes that the use cognitive avoidance or thoughts suppression avoidance to manage intrusive thoughts could be a maladaptive long-term strategy which may lead to more severe PTSD symptoms.

It can also be argued that denying the seriousness and severity of the dangerous event and trying not to think about it may lead to more recurrent and intrusive recollections of it. Some of the DSM-IV criteria for PTSD symptoms, especially re-experiencing the dangerous event, numbing, and avoidance of reminders, involve cognitive processes; accordingly, it is reasonable to expect that cognitive coping responses should be more strongly predictive of PTSD symptoms than behavioural coping responses.

Turning to the impact of meaning in life on outcomes, the hypothesis was that after controlling for the severity of the bombing, one or more of the two dimensions of meaning in life scale would predict the outcome variables. The results of this study partially supported this hypothesis in that searching for meaning in life predicted PTSD symptoms shortly after the bombing but not psychiatric co-morbidity. Related previous studies following bombing (Steger et al., 2008; Updegraff et al., 2008) have shown consistency with this result. Updegraff et al. (2008) reported that individuals that were able to find meaning following the 9/11 bombing attacks experienced less psychological distress than those who were searching for meaning two years after the event.

The assumptive world perspective (Janoff-Bulman, 1992) offers some insights into the aforementioned finding. We know from previous research that a bombing attack

experience is thought to shatter fundamental assumptions held by the survivor about the self and the world (Freh et al., 2012), thus leading to high levels of cognitive processing and a search for new meaning in life. It could be speculated, as these new meanings are found and the individual's view about the self and the world is reconstructed, that people resolve these existential issues and shift toward an endorsement of positive schematic changes. However, the ongoing search for meaning could be indicative of the shattered assumptive world and as yet unresolved cognitive processing. As such, it would seem that the search for meaning is not related to positive change towards reconstruction of the new assumptive world but related to greater distress. And those searching for meaning are working through the implications of a challenged assumptive world in which they are more likely to endorse negative posttrauma schematic changes. Helgeson, Reynolds, & Tomich (2006) agree with this notion. They conclude that the process of searching for meaning following a dangerous events is related to more intrusive and avoidant posttraumatic experiences.

In terms of the relationship between death anxiety and outcomes, two different statistical analyses indicated that death anxiety, after controlling for severity of bombing attack, predicted a significant amount of the total levels of posttraumatic stress and psychiatric co-morbidity. Previous literature following other dangerous events (Chung et al., 2000; Martz, 2004; Safren, Gershuny, & Hendriksen, 2003) has shown consistency with the finding of this study. Martz (2004) indicated that death anxiety predicted a significant amount of the total levels of posttraumatic stress reactions among 313 veterans and civilians with spinal cord injuries. Safren et al. (2003) reported that death anxiety was associated with overall PTSD symptom severity among patients with HIV. Chung et al. (2000) have also suggested that death anxiety was associated with PTSD and general health problems among 148 community residents exposed to an aircraft or a train crash.

It is possible to argue that a severe dangerous event, such as a bombing attack, may involve serious injury and threat to life. The existence of this severe injury may cause the

person to experience continual fear and thoughts about death, especially when the dangerous event represents death (on some level) to the individual. This can act as a proprioceptive trigger (trauma stimuli that arise from within the individual), stimulating non-adaptive reactions to traumatic dangerous events and influencing posttraumatic reactions and psychological distress.

In view of this perspective, existential fear in the form of death anxiety was predictive of posttraumatic stress reactions and psychiatric co-morbidity, given the fact that nearly half of the participants of this study were injured during the bombing, more than two thirds thought they were going to die, over one third saw hideous scenes such as people exploded to pieces and body remains, and more than two thirds saw people severely injured (see Table 5.3).

5.6.2 Research question 2

What is the interrelation between predictor variables and the outcomes?

Literature has shown that death anxiety is significantly associated with PTSD (Martz, 2004), whereas the finding of this study reveals that death anxiety did not influence PTSD directly but through mediators, namely MLQ-S and RC. The possible explanation for this finding is offered by TMT. The theory proposes that realization of humans that death is inevitable has the potential to cause anxiety. This awareness of eventual demise can be circumvented and avoided, to alleviate stressors, by feeling like their lives are imbued with existential meaning and purpose (Routledge & Juhl, 2010). In other words, finding meanings can protect people from negative emotions and psychological stressors caused by facing one's mortality. However, an inability to find meaning in the event could be accompanied by substantial emotional distress. The bombing literature is consistent with this proposition.

Updegraff et al. (2008) postulate that individuals who were engaged in a search for meaning after the 9/11 bombing attack were more likely to report PTSD symptoms over the following two years than those who were not .

It could be argued that finding meaning allows the individual to maintain one's beliefs in security, predictability and control, as well as to facilitate emotional adjustment, whereas, a persistent search for meaning is counterproductive. In other words, searching for meaning is not likely to resolve one's preoccupation with negative life events.

It is noteworthy that in addition to the indirect influence of death anxiety on PTSD, it also had the ability to influence PTSD and psychiatric co-morbidity through an individual's level of religious coping. The finding that use of religious coping had a significant, negative association with death anxiety and predicted total PTSD was expected.

A great deal of literature has showed that people who employed religious behaviours to cope with stressful or difficult life situations expressed little or no fear of death and higher levels of positive emotion (Koenig, 1988). Studies (e.g. Meisenhelder, 2002; Plante & Sherman, 2001) also examined how religious coping affected mental health outcomes. A significant association was found between religious coping and alleviation of PTSD symptoms, depression and anxiety (Plante & Sherman, 2001).

The probable explanation for the negative relationship indicated in the current study is that religious view point, represented in exhibiting religious coping, could modify reactions of death-threat stimuli as well as help to avoid negative thoughts and images arising from fear of death. However, it has been claimed that continual avoidance of the negative images and emotions could trigger posttraumatic stress reactions and psychological distress. Martz (2004) found that use of spiritual/religious coping to avoid and deny death-related thoughts was a significant predictor of all three of the posttraumatic stress clusters.

Turning to psychiatric co-morbidity, the findings, as predicted, seemed to support the hypothesis that death anxiety was directly related to psychiatric co-morbidity. Support for this

hypothesis comes from existing literature in that degree of death anxiety could determine general psychological health (Yalom, 1980; Lifton, 1993; Lonetto & Templer, 1986). Several studies (e.g. Chung et al., 2000) have also revealed a significant association between death anxiety, psychological distress, general depression and general anxiety.

One might speculate that disasters and dangerous events such as bombing would likely generate a sense of shortness of life and a great deal of death threat for the people involved. In such instances, the death anxiety may influence non-adaptive reactions and could lead to development of depression and psychological distress.

Another potential explanation could be the severity of past life-threatening events. Despite the fact that Iraq is a dangerous area, the majority of the participants of this study (81.6%) had not been in a life-threatening event prior to the bombing experience (see section 5.4.5). It appears reasonable that being in a dangerous event for a first time could trigger high degrees of life-threat anxiety and probable development of psychological distress. Chung et al. (2000) found that people who had been exposed to life-threatening events many times were not bothered to a significant degree by death anxiety since they had been exposed to even worse. As a result, the 'multiple' exposure did not make them worry about death and alleviated the severity of psychological distress.

The final hypothesis was that death anxiety would be related indirectly to psychiatric co-morbidity. The findings of this study confirmed this hypothesis in that death anxiety was associated indirectly with psychiatric co-morbidity through mediators, namely, insecure attachment and cognitive avoidance coping.

This finding may be interpreted as supporting the claim that attachment styles and coping strategies regulate the person's expression of death anxiety and psychiatric co-morbidity. This assumption has received empirical support. Studies (e.g. Lubetzky & Gilat, 2002) found that individuals who are characterized by insecure attachment exhibit stronger death anxiety and psychological distress than individuals with secure attachment style. This

is because insecure attachment styles reflect responses to separation, and death anxiety involves an element of irreversible separation that arouses separation anxiety, grief in anticipation of loss, and a significant likelihood of development psychological distress.

On the other hand, the finding that the cognitive avoidance strategy mediates the degree of death anxiety and psychiatric co-morbidity is not surprising and supported literature (Tiet et al., 2006). Previous studies presented evidence that avoiding directly dealing with death anxiety could minimize reminders of the death stimuli (Lonetto, 1980; Lonetto & Templer, 1986). However, persistent avoidance may result in a strong negative valence associated with death, subsequently leading to recurrent and intrusive recollections and closely linked to distress and depression.

5.7 LIMITATIONS OF THE STUDY

There are some limitations in the current study that need to be considered. One of the limitations is the response rate of the individuals who were invited to participate in this research. Of the 230 invited to participate in this study, 19.5% which represents less than one quarter did not wish to take place in the study. This might reflect severe avoidance and other PTSD symptoms. Thus, caution should be taken in generalizing the results of this study, because of the possible biased sample.

There are strong points in the study:

- To the best of the researcher's knowledge, the current study represents the first attempt toward efforts to understand the relationships between attachment orientations, meaning in life, coping strategies, death anxiety, PTSD and psychiatric co-morbidity over time among civilians following a bombing experience.
- The finding provides significant evidence that death anxiety primes to PTSD for individuals not inoculated by finding existential meaning after bombing.
- The findings indicate that religious coping is an important component of coping for Iraqi civilians, which challenges those views that emphasize the negative role of religiosity and religious coping in mental health.
- Cross-sectional studies such as Linley and Joseph (2011) suggested that longitudinal research is needed to track the search for meaning and the presence of meaning over time in order to confirm whether searching for meaning in life is accompanied by a negative worldview. The findings of the present study support the conceptual distinction between the presence of and the search for meaning and suggest that searching for meaning seems intrinsically negative.
- The findings also provide further evidence for insecure attachment as a vulnerability factor, given that it was found to predict PTSD and psychiatric co-morbidity shortly after the bombing.

- This study was conducted using mostly equal samples of male and female, all Muslims, with different education levels and with different outcomes. So, the findings might generalize to the broader population.

CHAPTER 6

STUDY 4: INVESTIGATION OF THE CLINICAL IMPLICATIONS FROM THE PARTICIPANT'S PERSPECTIVE

6.1 INTRODUCTION

Trauma literature has showed evidence that PTSD symptoms and psychological distress following bombing attacks can be successfully treated after survivors have received various forms of professional mental health intervention (Sprang, 2001; North et al., 1999) including psychological treatment (Verger et al., 2004), counselling therapies (DeLisi et al., 2003) and cognitive, behavioural, psychodynamic and existential techniques (Parson, 1995). Survivors were found to experience significant reductions in symptoms and be more able to manage their lives after the intervention.

However, no data was available on the limited and largely medical interventions e.g. pharmacological treatment, hospitalization and psychotherapy that the participants of this study had received in dealing with the effects of the bombing. Therefore, the aim of this study is to:

1- Identify what professional interventions, psychological techniques and personal coping strategies that participants had used for managing the distress resulting from the bombing and which of these strategies were most helpful for them.

2- Explore victims' subjective perspectives of the psycho-social factors which foster or hinder recovery from PTSD following bombing

6.2 METHOD

This study employed a mixed methods design in both collecting and analyzing quantitative and qualitative data aiming to explore the participants' perspectives on what had been helpful to manage the psychological distress. The term mixed methods is used throughout this study to reflect the use of both quantitative and qualitative methods within one study rather than the use of these methods in separate studies.

6.2.1 The quantitative sample

People who participated in studies 2 and 3 were recruited for this study. The contact was made via phone and e-mail with the participants by the researcher to obtain verbal consent. Of those three hundred and fifty six (m=179, f=177) who took place in study 2 and 3 at the first and second assessments, one-hundred and twelve people did not wish to participate in this study. No reasons were given. One was killed during the data collection process of this study. The remaining 243 participated in this study.

6.2.2 The qualitative sample

A total of six participants (male =4, female=2) were recruited for this phase from the people who participated in studies 2 and 3. The criteria for classifying people as recovered very well were fulfilling the screening criteria for full PTSD symptoms at T1 and no PTSD symptoms at T2. People were classified as still struggling if they fulfilled the screening criteria for partial or no PTSD symptoms at T1 and full PTSD symptoms at T2, or if they met the screening criteria for partial and full PTSD symptoms at both time assessments.

The researcher initially identified twenty participants (8 recovered very well, 12 still struggling) from their profiles/datasheet. Twelve people (5 recovered very well and 7 still struggling) agreed not to participate. A further two participants (still struggling) withdrew from

the study prior to the interview study commencing. A full description of the demographic variables will be discussed in more detail in the results of this chapter.

6.2.3 Scale of the quantitative phase

A questionnaire was developed by the researcher to collect information and address the questions that the research was intended to achieve. A list of possible interventions/ways of coping after the bombing experience was created according to the results of the previous studies (2 and 3), and participants ticked those that applied to them. These variables assessed a variety of ways of coping/interventions they might have adopted.

The interventions were classified into four integrative domains: 1- biological/medical intervention (2 options e.g. pharmacological treatment and hospitalization); 2- psychological intervention (2 options e.g. psychotherapy and counselling); 3- psychological coping techniques consist of (3 options such as trying not think about the bombing and drinking alcohol); 4- societal intervention (comprising four coping strategies e.g. social support, talking to family, group meeting); and finally religious intervention. This section consists of (5 strategies e.g. reading the Quran, performing prayer more than usual, and reading religious stories). The participants were asked to identify which of the above was helpful. All the questions were rated on a 2-point intensity scale (0= not helpful and 1 = helpful) to point out what they thought was the most important and useful intervention in terms of helping them to reduce distress. To indicate if they had discovered any other ways of coping that had been helpful, participants were requested to answer an open ended question to describe these ways of coping and how they had been helpful.

6.2.4 Materials of the qualitative phase

A semi-structured interview was employed and the schedule structure of the interviews was prepared by the researcher and the supervisory team. It should be noted that the structure of this interview was informed by the prior qualitative and quantitative findings. All the interviews were carried out by the researcher. The interviews addressed several issues to capture the research questions such as:

1- How would you describe how you are at the moment?
2- How would you evaluate your abilities to cope at the moment?
3- How do you think you have coped?
4- How have things changed since I last saw you?
5- What is getting better and what is getting worse?
6- Why do you think things have changed or not changed for you?

Prompt (What do you think you have learned from the experience of being in a bomb attack so far? What ways of coping have you developed?).

Duration of each interview was between 40-45 min with an average of 42.5 min. Interviews were audio-taped in Arabic and transcribed by the researcher into English.

6.3 Procedure

Phone calls were made by the researcher to invite eligible participants and inform them of the time and the venue of the interviews. During the interview, the researcher explained the study in detail and urged the participants to ask questions before consenting. Participants were also informed that they could withdraw at any point during the interview and that all their responses would be anonymised. Those participants who gave consent to participate in the study completed a consent form. All the interviews were conducted privately in a hall belonging to the MoH. No participants' names were recorded, but

information such as gender, age and bombing history (e.g. number of bombing experiences they had previously) were collected.

For the quantitative phase, after giving their consent, participants were informed of the location and time of data collection. During the data collection process, the researcher explained the study in detail and participants completed a consent form. The researcher also expressed gratitude to the participants for taking part for the third time in his project. Then, a letter of introduction/instruction and the questionnaire were given to all participants including those who participated in the qualitative phase.

6.4 Analysis

The interviews were transcribed verbatim in Arabic and translated into English by the researcher. Two professional interpreters who helped with the translation of the previous three studies were involved in verification of the accuracy of the English version of this study. An IPA analysis was employed (see section 3.5.2).

For the quantitative phase, SPSS 20 was used to analyze the data employing descriptive statistics.

6.5 RESULTS

This section starts with describing the demographic information of the quantitative and qualitative participants, followed by the results of the study that was conducted as aimed to identify strategies that participants used to manage the psychological distress resulting from the bombing, and to ascertain which of these strategies were most helpful in reducing that distress. This section also includes explanations for the main themes that were elicited from the interviews.

6.5.1 Demographic characteristics

Table 6.1 depicts the demographic information of the quantitative group. A total of 243 (m=145, f=98) of the people who took place in studies 2 and 3 were the participants of this study. The average age was 31.10 years (SD= 9.01), ranging between 18 and 53. About two thirds were married, the rest were single (36.6%, n=89), and a very small proportion widowed (2.1%, n=5) and divorced (1.6%, n=4). The majority of the participants were Arab. In terms of educational level, more than one third had received education up to secondary and university, and the rest had obtained education up to primary.

Table 6.1 Demographic information of the quantitative group

	Study 2		Study 3	
	Mean	**SD**	**Mean**	**SD**
Age	30.03	8.99	32.30	8.92
Gender	**N**	**%**	**N**	**%**
M	72	38.9	73	39.5
F	57	30.8	41	22.2
Marital status				
Single	53	28.6	36	19.5
Married	71	38.4	74	40.0
Divorced	2	1.1	2	1.1
Widowed	3	1.6	2	1.1
Income				
Low income	75	40.5	44	23.8
Medium income	43	23.2	48	25.9
High income	11	5.9	22	11.9
Education Level				
Primary	35	18.9	31	16.8
Secondary	43	23.2	43	23.2
University	54	29.2	40	21.6
Ethnicity				
Arab	111	60.0	104	56.2
Kurdish	18	9.7	10	5.4

The demographic characteristics for the participants of the qualitative group are listed in table 6.2. Six participants were chosen for this phase. Three participants were chosen on the basis of their recovery from PTSD symptoms, whereas the other three were chosen on the basis that they were still struggling to recover. The average age was 33.5 years (ranging from 21-52). The gender distribution among them was quite even with almost half males and half females. The majority of them were married, and the rest were single. The participants distributed equally in terms of educational level, in which half of them had received education up to primary and university. All the participants identified themselves as Muslims. All the

participants who were still struggling reported that they had been injured in the bombing incident. Severity of injuries varied. Two participants reported that the injury was moderately painful, whereas one described the injury as severe and painful. The relationship between severity of the injury and development of probable PTSD was tested for the both groups (recovered and still struggling). *t*-test showed there was no significant relationship between both groups and development of probable PTSD (see Table 6.2).

Table 6.2 Summary of the demographic details of participants

Number of participant*	Gender	Marital Status	Age	Religion	Education level	Were you injured	PTSD symptoms		
							Mean	SD	*t*
Recovered									
1-r	Male	Married	52	Muslim	Primary	No			
2-r	Male	Single	24	Muslim	University	No	35.33	3.05	
3-r	Male	Married	33	Muslim	University	No			
Struggling									1.37
1-s	Male	Married	38	Muslim	University	Yes			
2-s	Female	Single	21	Muslim	Primary	Yes	39.00	3.46	
3-s	Female	Married	33	Muslim	Primary	Yes			

*All participants' names have been changed to protect confidentiality; 1-r refers to the recovered participant, 1-s refers to the participant who still struggling

The results indicated that talking to family was the most commonly reported helpful strategy, followed by using psychological techniques, in particular, trying not to think about the bombing. The next most frequently reported helpful strategy was social support in that more just over 60% indicated that talking to friends was considered a great deal as a helpful strategy. Religious strategies were also largely employed in that almost same proportion of participants showed that they were trying to overcome distress by seeking support and strength from God, performing prayers more than usual and reading the Quran. The lowest rate, however, was psychological intervention in that only 2.1% of the participants reported

relying on psychotherapy techniques, followed by almost same proportion who claimed that receiving counseling and pharmacological treatment were helpful strategies. The results also indicated that only one participant reported drinking alcohol as helpful strategy to cope with the bombing (see Table 6.3).

Table 6.3 Distribution of strategies among the participants

	Helpful		Not helpful	
	N	**%**	**N**	**%**
Biological/ Medical Intervention				
Pharmacological treatment	19	7.8	224	92.2
Hospitalization	71	29.2	172	70.8
Psychological Intervention				
Psychotherapy/c	5	2.1	238	97.9
Counseling-talking with a counselor	17	7.0	226	93.0
Psychological Coping Techniques				
Trying to avoid thinking about the bombing	162	66.7	81	33.3
Distracting yourself with work, study and other activities	115	47.3	128	52.7
Drinking alcohol	1	.4	242	99.6
Societal Intervention				
Social support-talking to friends	148	60.9	95	39.1
Talking to family	185	76.1	58	23.9
Group meeting with people exposed to same experience	52	21.4	191	78.6
Institutional support	41	16.9	202	83.1
Religious Intervention				
Reading the Quran	136	56.0	107	44.0
Performing prayers more than usual	138	56.8	105	43.2
Attendance mosque	97	39.9	146	60.1
Reading religious stories	89	36.6	154	63.4
Seeking support and strength from God	144	59.3	99	40.7

Participants also reported using other strategies to reduce distress including leaving the country (36%), hoping for improvement of life conditions (security, political, economical)

in Iraq (20%), adequate medical and psychological care (13%), spreading peace (11%), banning continual showing of bombings on TV (9%), and removing remnants of the bombings from the scene as quickly as possible (8%).

6.5.2 Main themes for recovered group

Five themes emerged from the 3 interviews among the people who recovered very well; (1) Sources of social support; (2) Changes in self; (3) Context of Iraq; (4) Turning to God; and (5) Continuing process of adjustment.

1- Sources of social support

The present theme builds on and extends prior research on the beneficial effect of social support on mental health. In particular, it focuses on the importance of various sources of social support for bombing survivors. Participants showed that social support, coming from various sources, such as spouse, family, relative and friend played an important role in one's ability to face problems and maintain health after bombing. It included providing empathy, care, love and trust (emotional support), actual aid in time, instrumental support such as money and energy, and appraisal support such as evaluative feedback, advice and suggestions (information support).

> *"I have been encouraged by my father to contact people who were with me in the incident, and I did. He also urged me to visit the scene of the bombing, and I did" (2-r)*

> *"Actually, my friends and my family showed me new ways to face problems" (2-r)*

Although results on the mechanisms through which social support influences mental health are inconclusive, social support is supposed to have a positive effect on one's health and reduce psychological distress.

2- Changes in self

Participants demonstrated that it is undeniable that serious psychological ramifications can occur following bombing attacks. However, the importance of positive subjective appraisals of their ability to cope with traumatic situations such as bombings was an indicator of alleviation of psychological distress after this tragedy. The interviews demonstrated that individuals who reported lower levels of psychological distress (recovered very well) were talking positively about their self-efficacy.

"I started to look to the positive things rather than the negative things"(1-r)

"I've learnt that my self-confidence made me stronger"(3-r)

This clearly suggests that an individual's self-efficacy judgments during the early recovery period following a disaster are potentially important in post-disaster recovery.

3- Context of Iraq

Participants highlighted that real threatening events lead to an increased activation of the psychological distress, whereas living in a safe environment that is relatively free of such threat cues could provide society-wide benefits.

"As human beings we need to live in a safe place, otherwise we'll suffer a lot"

Recovered participants thought that the country is now much safer than a few months ago due to departure of "occupying forces" and security improvements. Such a secure and safe environment, in which the population has the freedom to pursue daily activities without fear of politically motivated, persistent or large-scale violence, provided a good opportunity to feel that they are not particularly vulnerable. Consequently, this feeling provided a sense that they lived in an environment in which their physical and psychological well-being was, somehow, protected.

"I think it is important to rebuild our confidence that our society is able to protect us"(3r)

"Now I'm confident that my country is capable to protect me"(2r)

4- Turning to God as a guiding force

Participants referred to the need to seek for positive meaning, purposes behind stressors, and connectedness from their experience by adopting religious practices and turning to God as a positive way of support.

"What happened was due to God's will"(1r)

Interviews showed that stressful life events, in particular experience of a bombing attack, are likely to trigger psychological distress. However, participants realized the importance of some affective and protective factors, such as God's support, that leave individuals more able to cope and serve to buffer the effects of these stressors. Participants engaged in cognitive strategies such as thinking about God as a supporter or behavioural strategies such as personal use of prayer, asking God for strength and reading the Quran to alleviate the harmful effects of stress and help to ease PTSD symptoms.

"I prayed to God to help me face all the problems I experienced, and get rid of fear. I believe that God responded to my prayers. You know, God responds to the supplications we make" (2r)

5- Continuing process of adjustment

In addition to the social support and religious coping patterns, participants followed a process of adjustment to ameliorate psychological discomfort and maintain positive changes. It was noticed that the recovered individuals sought to distract the attention away from negative concerns about self-threat, often through work, playing with friends, joy, holidays and refocusing on more positive features of the situation.

"I went for two month's holiday. During those two months, I forgot everything" (1r)

"I found a job. That helped me a lot. Life's problems and demands helped me to forget the incident" (2r)

6.5.3 Main themes for still struggling group

The three interviews among the people who were struggling to manage the distress resulted in four themes; (1) Superficial social support; (2) Changes in self; (3) Dangerous context of Iraq, and (4) Turning to religion.

1- Superficial social support

Unlike the recovered people, participants who were struggling reported that others were available as a resource of social support but support was often not actually received, or the social support was available but they were not able to use it, which played a negative role in coping effectiveness and psychological and physical health. Indeed, impaired perceived social support is one of the most powerful risk factors for PTSD and psychological distress.

"I had lots of problems with my family, neighbors, and problems with my wife"(1s)

It was also noted that struggling participants were not able to foster supportive social relationships.

"I prefer to stay away from people"(3s)

"My relationship with others is not very good"(2s)

2- Changes in self

In contrast to the recovered well group, these participants emphasized a lessening or deterioration of self and efficacy. The loss of positive self was contended with by most of the people who were struggling to get rid of psychological distress. They frequently experienced a crumbling away of their former self. Such loss is mostly marked as not seeing the self as capable and effective. Hence, suffering such losses resulted in a diminished self.

"I feel that I'm not the same person as before the incident" (3s)

"I thought I was a strong person, but the incident proved that I'm weak" (2s)

Under these conditions, persons who struggled not only viewed the self as negative, but also often blamed themselves for lack of control. With such values, the participants questioned their own self-worth and viewed their developing limitations as losses.

"I blame myself for being lazy"(1s)

"The non-peaceful life circumstances have stolen my strength and faith"(3s)

3- Dangerous context of Iraq

Contrary to the people who had recovered, struggling participants emphasized that Iraq is still dangerous. In fact, it is a combat zone which has no safe place, where there is very little by which a person can differentiate friends from foes, and where there is no warning of when or where the next bombing will occur.

"Life here is very dangerous. We don't feel comfortable. I don't feel that life in Iraq is worth living"(2s)

It is hardly surprising that we are seeing permanent of high rates of PTSD and other anxiety disorders among people who assume that they live in a very dangerous context and this context has a continuous negative influence.

"As long as the security situation is bad and killing is everywhere, I don't think that the future will be better"(3s)

4- Turning to religion

Many factors could influence the development of psychological distress. One potential moderator is religious coping, which has long been implicated as a protective and positive impact on mental health. However, religious coping might be occasionally a risk factor to hinder recovery from psychological distress. Interviews showed that participants had various images of God including God as potentially punishing "negative religious coping". They also expressed a spiritual discontent.

"The incident might be a threat from God"(2s)

"I've met some friends who quit performing prayers" (3s)

"My motive to prayer is fear of death and then I get punished"(1s)

These are believed to be maladaptive responses that exacerbated the psychological distress and might contribute to worsening mental health.

6.6 DISCUSSION

The purpose of this study was firstly to examine the most helpful professional and personal interventions that were used to manage post-bombing distress and secondly to explore the subjective experience of the psycho-social factors that hinder or foster recovery from post-bombing psychiatric distress from the participants' perspective.

The results of the present study showed that societal intervention- talking to family- was rated highest in terms of what helped to manage post-bombing distress, followed by psychological coping techniques- avoiding talking and thinking about the bombing. Religious intervention, such as reading the Quran, personal prayer, and seeking support from God, was rated as the next most common helpful strategy. Both psychological and medical interventions, however, were found to be least common helpful strategy used to reduce psychological distress.

This finding has received support from recent literature (e.g. Besser & Neria, 2010; Besser & Neria, 2012; Páez et al., 2007; Shahar et al., 2009) and earlier results also perceived social support and other personal strategies such as avoidance and religious patterns to serve a protective role, primarily in times of stress, by enhancing adaptive coping behaviours.

The findings of this study also indicate that there are several factors (themes) which could hinder or foster post-bombing psychological distress such as social support, individual self-efficacy judgments, context of the society and religious practices. These themes were

found to overlap among people who recovered and who still struggled to manage the psychological distress. However, most importantly, these themes operated in different ways. For instance, functions of social support coping was seen as important and to have beneficial effects in both groups, but there was dissimilarity in using such support between them. As an example, participants who had recovered well were able to use social support effectively, whereas people who still struggled were not. It appeared that even though social support was available, the people who still struggled to recover were less able to utilise this.

The primary explanation that has emerged for this is that interpersonal resources such as perceived social support are essential to manage coping with stress and have been associated with psychological well-being for individuals who have experienced terror attack. However, a person's perception that social support is unavailable, "no actual support" or can't be used, plays a significant role in the continuation of long-term of psychological distress. Moreover, people who are unable to maintain supportive social relationships are less resilient in the face of life-threatening conditions.

Religious coping was also seen differently. The finding showed that participants of both groups had an inconsistent picture about the religious strategy helping them cope. In addition, there was a difference in using religious coping. It was noted that the recovered group used a positive relationship with God "positive religious coping", whereas the struggling group had a more negative fearful relationship with God "negative religious coping".

This finding is consistent with studies which have focused on the relationship between religious coping and mental health and found that positive religious coping moderates psychological distress by buffering against the effects of stress (Carpenter et al., 2012; Pargament et al., 1990). The finding of the present research adds further evidence to the growing body of research indicating that positive religious coping responses are protective and positively impact mental health, whereas negative religious coping responses

are maladaptive and negatively impact mental health. The discussion of the role of religious strategies to cope with bombing and other traumatic events seems to have moved from questioning whether or not they can be beneficial to trying to determine how best to address their role.

Finally, results also showed that there were differences in the extent to which people were able to think and talk about positive and negative thoughts, e.g., that Iraq continues to be a dangerous place or even that an event like this might occur again. There appeared to be a balance between becoming overly negative and pessimistic and risking depression as opposed to overly optimistic and slightly delusional. People showing the best recovery seemed to be able to openly express these mixed feelings to themselves and to friends and family.

It is possible that both coping and lack of coping are related to attachment styles that participants developed in childhood and which continued to shape how they attempted to cope with their distress. Therefore, further analysis was conducted to find out the attachment profile of these six people (see Table 6.4). The analysis revealed that all of the three people who described and scored themselves as having made good progress in recovery also demonstrated secure attachment strategies. In contrast, all three of the group indicating poor recovery indicated insecure attachment patterns (two showed fearful attachment and one dismissing).

Table 6.4 Attachment patterns for the qualitative participants

Participant	Attachment styles			
	Secure	Fearful	Dismissing	Preoccupied
Recovered				
1-r	✓			
2-r	✓			
3-r	✓			
Struggling				
1-s		✓		
2-s		✓		
3-s			✓	

In terms of the mechanisms of how this related to attempts to cope post-bombing, it appears that an avoidant attachment style is associated with trying to be excessively self-reliant and a fearful style with being anxious and ambivalent about how to cope. In particular a central proposition of attachment theory is that a secure coping strategy involves the ability to trust others and be able to turn to them for support and comfort. It was clear from the findings that the three people who coped well utilised social support, in terms of family and friends to help them to cope. An ability to trust and rely on others for such support is what Bowlby (1982) defines as secure attachment. The participants in this study demonstrated that this reliance on others was not a naïve view of the world as safe but a 'realistic' view of Iraq as continuing to be dangerous. Yet alongside this realistic appraisal of the future, secure attachment also features a view that turning to others for support will still be helpful.

Specifically, this also relates to the important theme of the context of Iraq as a dangerous place. The participants who had recovered well also described their world view as threatened, especially in regard to their lives in Iraq. However, this sense of danger was buffered by a continuing 'secure attachment' based view that they could still rely on close

friends and family. In contrast, for the three people who had not recovered well, it appeared that a more global pessimistic view of the world and of others had developed. Again this tendency to catastrophise and to cut themselves off from others is a core feature of insecure attachment patterns.

However, these findings do not simply suggest that people who have prior secure attachment will invariably cope well. It was clear that the bombing was also a shock to the security feelings of the people who recovered. However, in this study the 3 secure participants had endorsed secure patterns at T1 and T2 in the previous studies. This is suggesting that the shock of the bombing had not so fundamentally shaken their view of relationships and their attachment figures for them to develop more secure patterns. Attachment theory here suggests that the 'shattered world assumptions' theory may only partly explain the impact of events such as bombing attacks, and specifically, that the shattering of views is more local to the event. For people who previously held secure attachment representations, it does not challenge their fundamental trust in their own attachment figures.

6.7 IMPLICATIONS OF THE STUDY

The findings of the present study have a number of clinical implications. The results of this study suggest the importance of social support in the intervention programs. the findings point to perceived availability of social support such as talking to family and friends as a most valuable resource among individuals, suggesting that mental health and social care professionals should consider developing interventions that will enhance social support in general and among people who still struggle in particular.

The findings also suggest that some psychological strategies such as avoidance and distraction are very helpful. Although these functions of coping (distracting attention) have beneficial effects, it is noteworthy that excessive or inappropriate use of these strategies can be debilitating and result in harmful consequences, such as overeating or excessive spending. Having and being able to utilize a network of family and friends is important in helping the person to discuss and process the events and maintain a sense of self-worth. They can also provide distraction and fun so that the person is not continually pre-occupied with or ruminating about the bomb experience. This resembles the dual-process model of recovery from grief and loss.

The findings also showed that there appear to be a number of key differences in participants who have shown good recovery and those who have not such as processing the memory and imagery associated with the bombing. Participants who had recovered well seemed to have found ways of being able to think about and imagine the incident. One person had even physically visited the site of the bombing. Again, it seemed important to get a balance between thinking and not-thinking (ruminating) about the bombing. To think and imagine it appeared to help to make the emotional responses to the memory more bearable over time. This is basic trauma therapy- desensitization. Some participants were doing this spontaneously. In other words, it is important not to block the person from talking and

thinking about the event. At the same time, they need to help them to stop if they are getting very distressed.

The next chapter will be a general conclusion of the studies carried out in this PhD thesis.

CHAPTER 7
GENERAL CONCLUSION

7.1 INTRODUCTION

Since 2003 the Iraqi people have been exposed to a dramatic increase in conflict, including war and terrorist bombing attacks. These bombings are considered to be the most severe incidents of terrorism ever experienced on Iraqi soil. Thousands of Iraqis have been killed and wounded. It has also been evident that millions have heard and witnessed destruction and seen casualties that have resulted from these on-going bombings. In effect, most Iraqis have either experienced such terrorist events directly or vicariously through the damage and distress that has been caused to family members, friends or colleagues. The extreme magnitude and intensity of these bombings make it a particularly significant subject for the study of mental health effects of trauma because of the profound effects anticipated among survivors, including individuals with no history of psychiatric problems.

The literature review chapter has documented the research that has previously been conducted, for example the March 2004 bombing in Madrid, the Oklahoma City bombing in 1995, the Omagh bombing in Northern Ireland, the France bombing in 1995-1996, the U.S. embassy bombing in Nairobi, the bombing in Bali in 2002, the bombing attack in Istanbul in 2003 and the London bombings of July 7, 2005. Available literature on such disasters has documented mental health problems and identified common risk factors for PTSD and psychiatric co-morbidity both among those who were immediate victims (i.e., people who were direct witnesses of the events), as well as among people who were distant from the events but were indirectly or vicariously affected by them. However, to date, no systematic study has been conducted to investigate the impact of terrorist attacks on the mental health and psychological well-being of Iraqi civilians.

One of the reasons why a study such as this was important is that Iraq continues to be a dangerous place and hence raises a range of special concerns about how people struggle to cope and recover in sub-optimal circumstances. Many previous studies (e.g. Handley et al., 2009a; Handley et al., 2009b) which have looked at recovery from trauma assume that there is a relatively stable and secure context within which people are able to gain a sense of security to help them recover. Arguably, these conditions to facilitate recovery do not exist in Iraq.

The study has also attempted to offer a multi–method analysis of the impact of being in a bombing attack by employing a combination of qualitative and quantitative methods to gain a rich account and understanding of the effects of the experience.

7.2 Summary of the aims

This thesis had four objectives, aimed to address the gaps in literature and took the form of four studies. The first study was designed to explore how people who have experienced a potentially trauma inducing event of being a direct victim of a bomb attack make sense of their experience and identify their ways of coping. Based on the results of this study, the broad question was how the themes identified interrelate to influence the outcome of PTSD and psychiatric co-morbidity.

The second study was designed accordingly to investigate the nature of post-bombing PTSD by exploring its relationship with other psychiatric symptoms and the risk factors of past life-threatening events, attachment styles, perceived social support, altered self-capacity, and the shattering of world assumptions, as well as the interaction of these factors in post-bombing PTSD and psychiatric co-morbidity. The trajectory of post-bombing PTSD symptoms, psychiatric co-morbidity and attachment styles over time was also examined.

The third study was complementary to the second study and designed to investigate the extent to which other risk factors, such as personal coping strategies, religious coping, death anxiety, and meaning in life are related to PTSD and psychiatric co-morbidity, as well as the interrelation of these factors in PTSD and psychiatric co-morbidity.

Study four aimed to gain further understanding by comparing the experience of 3 people who were recovering well as opposed to three who were still struggling to cope. The study aimed to identify the helpful interventions that the participants had used for managing their distress.

7.3 Summary of the findings in the light of theoretical perspective

This section aims to summarise and start to integrate the main findings from the four studies within a unifying structure. So at the end of this thesis, readers will hopefully have an idea of how its findings cohere together. As well, readers will be able to see the contribution of some of the psychological factors to PTSD and mental health in the light of the present findings. A proposed model integrating the findings is offered in Fig 7.1.

The first qualitative study gathered twenty semi-structured interviews and an IPA analysis. Seven meta themes were identified which were seen to encapsulate the participants' subjective experiences of the bombing attack: mental and physical health problems, interpersonal relationships, loss of self, changes in attachment, shattering of world assumptions, existential issues and attempting to cope. These findings indicated that, even though there were considerable individual variations in the level of 'psychopathological' symptoms found, there were also key common themes in how people experienced such an attack and the strategies they later used to cope. These findings both support the limited existing research (Luce et al., 2002; North et al., 2004) about the subjective experience of bombing attacks but also provide some useful elaborations.

The findings showed that exposure to bombing could generate considerable risk of mental, physical and social problems. It also revealed shared meta themes of loss of self, shattering of world assumptions, and existential issues, expanding on the nature of the symptoms that are described by PTSD theory and diagnosis. These were primary features which captured the nature of the experience of the bombing attacks. In relation to the shattering of world assumptions which had previously been found to be important, it was clear that in this study, this was more complex. Iraqis already had a view of the world as unsafe but what appeared to be shattered was a defensive strategy of attempting to ignore or minimise the dangers in the hope that it might not 'happen to me'. The reality of being in a bombing attack did not simply shatter assumptions but perhaps confirmed just how dangerous life in Iraq 'really' is. In effect this was confirmation not simply of a shattering of world view. What was shattered perhaps was a dissociative defensive process of denial of the continuing of everyday danger in Iraq.

The results of this study also indicated important variations in the nature of coping strategies adopted. A dominant strategy appeared to be avoidance behaviour which constituted attempts not to think about the experience and to try to minimise and dampen emotional reactions to the memories. The interviews indicated that this strategy may have been less helpful and this is consistent with existing literature. Studies (e.g. Littleton et al., 2007) have found that there is a consistent association between avoidance behaviour and personality disorders. Likewise, there are studies that clearly suggest high-level avoidance entails the risk of development of trauma-related psychopathology in later life (McFarlane, 1992). This finding relates to the shattering of world assumptions above. In effect the greater the avoidance in place the more the actual experience of a bombing attack could present itself as a massive shock and arouse emotional distress. Avoidance also means that the person does not practice or rehearse in any way how they might feel, respond and cope, were they ever to experience such a situation. Obviously excessive rumination about

possibly being in an attack can also be dysfunctional in that it can lead to anxiety states but a balanced and realistic level of contemplation about the realistic possibility of experiencing such an event may be functional and necessary for emotional survival in Iraq.

This study adds to our understanding of how psychological difficulties, for example, loss of self and shattering of assumptions, may continue to hold back opportunity to recover. The findings of this study illustrate key aspects of the experience and highlight issues to consider for those caring for bombing survivors. However, the experience of a bombing attack and ways of coping are linked with the wider cultural context of danger and the lack of a safe base to resolve the experience. It was also an important finding that such avoidant coping strategies were characteristic of Iraqi culture and had become one of the dominant ways of coping. For example it was expressed frequently by participants as advice from family and friends to 'try not to think about the events', or to 'put it out of their minds and get on with life'.

The second study employed a longitudinal quantitative method to explore relationships and interrelationships between a range of psychological factors and outcomes. It was found that after exposure to bombing, 19% of the participants met the screening criteria for partial and 57% for full PTSD symptoms at T1. Psychiatric symptoms such as somatization disorder, anxiety disorder, and depressive episodes were observed significantly for most of the participants. However, the symptoms of PTSD and psychiatric disorders tended to decline over time regardless of being treated or not. This study also showed that post-bombing participants were significantly worse than the control group in showing psychiatric co-morbidity symptoms, perplexity styles of relating and attachment, feelings of safety, stability of personal relationships, and heightened perceptions of threat and behavioural changes.

The results of study 2 supported the hypothesis regarding the importance of social support in that after controlling for the severity of the bombing attack, perceived social support predicted PTSD symptoms. However, after controlling for severity of bombing, perceived social support did not interact in predicting psychiatric co-morbidity. There appeared to be an important connection here in that perceptions of the severity of the experience involve the participant reflecting on how distressed they felt and continued to feel by the attack. Hence, this perception that it has had a bad effect on them would be expected to correlate with psychiatric co-morbidity.

Study 2 also found that exposure to bombing shatters the fundamental assumptions about the safety of our world and also affects people's core sense of self shortly after the bombing. Moreover, experiencing bombing attacks deeply shatters our held and probably unexamined invulnerability assumptions. The results also indicate that people are able to generate resilience in part by developing more complex and 'realistic' world assumptions which recognize the world as a potentially dangerous and unpredictable place. This is consistent with attachment theory in suggesting that a secure attachment orientation can involve a 'realistic' view of the dangers. Once the person feels that they have been able to develop some coping strategies this can allow them to function and to feel relatively safe. This appears to help people to be prepared for, and to gather resources for dealing with unpredictable dangers, which in the case of Iraq, are perhaps predictable in that it continues to be a highly dangerous country.

It is noteworthy that the severity of the bombing influenced psychiatric co-morbidity indirectly, namely, through controllability of events, as one dimension of shattered world assumptions. The results also indicated that severity of the bombing had the capacity to influence post-bombing PTSD directly and indirectly through mediators, namely, affect dysregulation as one dimension of the altered self-capacity, and trustworthiness and goodness of people as one dimension of the shattering of world assumptions.

Interestingly, these personal characteristics interacted to influence the outcomes indirectly following bombing. Such an interactional relationship has not previously been made explicit in existing theory. In line with the Terror Management Theory (TMT) perspective, the bombing itself is not sufficient to develop PTSD symptoms. There are, however, other different psycho-social factors that could predict a significant amount of the severity of PTSD and psychiatric co-morbidity.

The findings of study 3 which looked at changes over time showed consistency with study 2 in terms of prevalence and trajectory of PTSD, psychiatric co-morbidity and attachment styles. Again, this study found that the incidence of post-bombing PTSD among civilians in Iraq was high, in that 52% fulfilled the screening criteria for partial PTSD and 29% for full PTSD at T1. Psychiatric co-morbidity was also found to be substantially high (85%) and 73% in total endorsed one of the three insecure attachment styles. Results also demonstrated that the bombing participants were significantly worse than the control group in psychiatric co-morbidity and adopting secure attachment. Moreover, the bombing group showed lower scores in meaning in life and experienced death anxiety much more than the control. However, the findings showed that the severity of PTSD symptoms, psychiatric co-morbidity, and people who adopted insecure attachment styles showed significant alleviation over time. In other words, people were recovering gradually.

The changes over time varied. As an example, some participants became less anxious and more secure. In contrast some participants did not improve and continued to employ avoidant and fearful strategies. This is consistent with attachment theory in that people are seen to utilise their core attachment strategies in how they attempt to cope with danger. In fact, attachment theory is essentially a theory about how we cope with danger and a central aspect of a secure attachment is that we are able to turn to others for support in such times. It appeared that participants who were initially (prior to the attack) relatively secure in their attachment orientation were more able to make use of the available social

support. In effect they had a more trusting view of the world and a sense that it was legitimate to ask for support.

After controlling for the severity of the bombing, religious coping and cognitive avoidance had a role to play in predicting PTSD and psychiatric co-morbidity shortly after the bombing. Insecure attachment, as one dimension of attachment patterns, was also found to be significantly associated with PTSD at both times, but did not predict psychiatric co-morbidity just shortly after the bombing. The results of this study also supported the hypothesis in that searching for meaning in life predicted post-bombing PTSD symptoms shortly after the bombing. However, the results demonstrated that searching for meaning in life did not predict psychiatric co-morbidity at both times. Death anxiety was shown to have a direct role to play in the development of post-bombing PTSD reactions (Martz, 2004) and psychiatric co-morbidity. However, the findings in this study showed that death anxiety had revealed another interesting picture. It was found that death anxiety was related indirectly to outcomes in a way which is not apparent in the existing theories.

Two striking differences were specified regarding the specific association between death anxiety and outcomes. Firstly, this study suggested that extreme death anxiety caused by exposure to bombing could be avoided by finding meaning in the event. However, a persistent search for meaning would be accompanied by substantial emotional distress. Secondly, the findings indicated that individuals who were characterized by strong death anxiety exhibited insecure attachment which, in turn, influenced a significant likelihood of development of psychiatric co-morbidity. Again the causal processes here are complex in that extreme anxiety is actually one of the core features of insecure attachment (anxious-fearful). Hence, it would be expected that a high level of pre-occupying anxiety about death and fear of dying would be associated with self reports of attachment security/insecurity.

The intention was to expand our knowledge regarding PTSD reactions by understanding more about what had helped participants to reduce distress from their

perspectives. With such knowledge, specialists would be able to provide better treatment. The final study was designed accordingly and employed mixed method data collection.

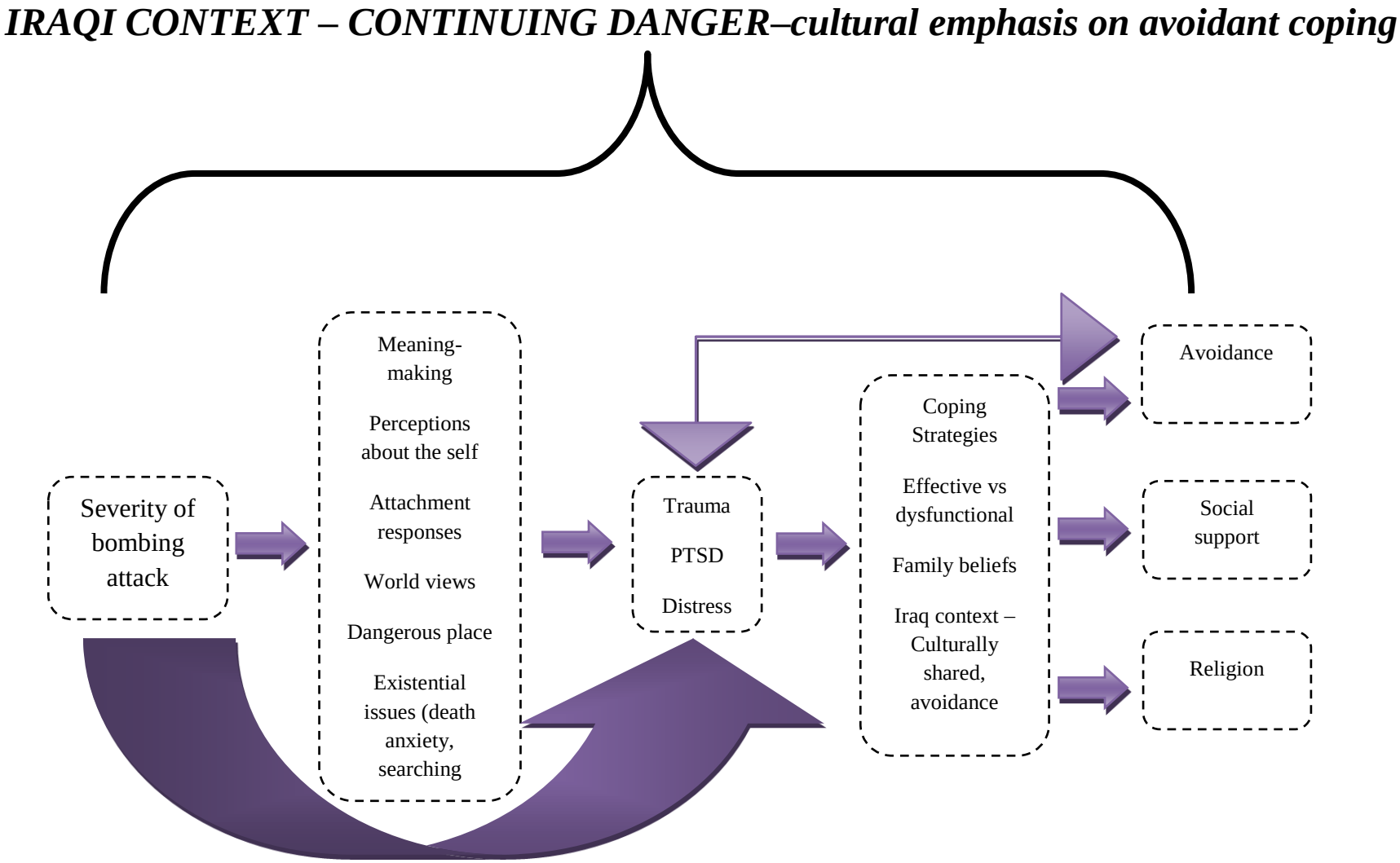
The results of this study highlighted a variety of strategies that participants found helpful to reduce the psychological distress resulting from the bombing experience. However, it was reported that social support such as talking to family was the most helpful strategy to manage post-bombing distress, followed by avoiding thinking about the bombing. Other interventions included reinforcing one's belief system that God and other religious strategies are an important source of strength and support helped to manage the tremendous danger they were exposed to. But, importantly some differences between people who recovered well and those who were still distressed were highlighted. For example, religious coping was used in different ways among participants of both groups. One participant (recovered well) looked to God as a benign and comforting figure whereas another (struggling to recover) was fearful of being punished further by God because they had not been to prayer. These differences are very important to note and also suggest that the core attachment strategy that people hold is also played out in the relationship they seek with God; for example, as a trusting as opposed to fearful figure.

It was also interesting from the first qualitative study that in some cases family members advised an avoidant coping strategy such that family members did not offer a source of support in the sense of helping to accept and manage the painful feelings. It appeared that social support needs to involve an active orientation of family members to allow discussion of the experience and to allow difficult feelings to be expressed (see section 6.7). Alongside this, it also appeared to include the provision of direct physical and practical support and assisting the person to continue their lives in terms of managing work and friendships etc.

It should be noted that some results in study 4 were found to contradict the theories, e.g. neither psychological intervention such as psychotherapy and counselling or medical

interventions such as pharmacological treatment and hospitalization were found to be helpful for the participants and they did not play a role in relation to managing the psychological distress. To an extent, this is somewhat surprising, given that literature exists to show that psychological and medical interventions are often related to alleviation of PTSD and psychiatric co-morbidity symptoms. However, the limited number of trained professional groups (psychologists, psychotherapists and psychiatrists) who provide psychological interventions for the survivors of bombing attacks in Iraq could be a potential explanation for this contradiction.

Figure 7.1 Proposed model summarizing the impact of bombing and coping



7.4 Final remarks

The preceding studies basically reveal that there are some important aspects which need to be unveiled. First, the social, psychiatric and psychological services must be available to assist bombing survivors to alleviate psychiatric and social consequences by offering a chance to process experiences and feelings. Even more important, mental health services must be provided in primary care. However, it needs to be recognised that not all participants will use such services, for example if they predominantly employ avoidant attachment strategies. Furthermore, there appeared to be a broader cultural context in Iraq in which avoidance is a very widely used strategy. This is combined with a view that Iraq is unsafe and will continue to be a dangerous place so the best strategy is to try and ignore the danger and get on with life. However, the participants that recovered well did not fully endorse this approach and there also appeared to be a recognition in families that allowing emotional expression while offering practical support was essential.

Second, studies in this thesis showed that there are some factors that could mediate the effect of severity of bombing and PTSD and psychiatric co-morbidity such as insecure attachment, affect dysregulation and perceptions of safety about the world. Specialists need to address these personal mechanisms when treating bombing survivors. There is no point in merely helping to reduce people's experiences of the bombing, intrusive thoughts and avoidance behaviours.

Third, the findings of this thesis also revealed the importance of the interactional relationship between social support and distraction of attention strategies to cope with the bombing. So, Iraqi families are deeply responsible to provide an atmosphere of discussion and help the person to maintain their sense of self-worth. Additionally, they required to provide distraction and fun so that the person is not continually pre-occupied with or ruminating about the bomb experience.

Finally, the findings of this thesis are only a small attempt to expand the limited existing research about the subjective experience of bomb attack literature. The outcomes of which, hopefully, will open up debate for future research, stimulate researchers to take forward what this thesis has found, and be an inspiration for their future work. Also, I hope that the outcomes of this thesis will have important implications for understanding and improving the psychological well-being and quality of life of those who suffer from the consequences of terrorist bombing attacks around the world and in Iraq in particular.

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Appendices

Appendix 1: Demographic information

1. Participant number: _____
   Office use only/Do not fill out

2. Date of assessment: _____
   Office use only/Do not fill out

3. Gender:
   a) Female
   b) Male

4. Age _____

5. Marital status:
   a) Single
   b) Married
   c) Divorced
   e) Widowed

6. Ethnicity: Arab_____, Kurdish _____

7. Occupation _____

8. Educational level (e.g. primary, secondary, Bachelor, Master, PhD etc) _____

9. Income level

10. Have you ever suffered from major life illnesses including mental illness?
    please clarify _____

Appendix 2: MMSE

I would like to ask you a few, general and simple questions in a number of areas.

Orientation to Time	Correct	Incorrect
What is today's date?	☐	☐
What is the month?	☐	☐
What is the year?	☐	☐
What is the day of the week today?	☐	☐
What season is it?	☐	☐
		Total ———

Orientation to Place		
Whose home is this?	☐	☐
What room is this?	☐	☐
What city are we in?	☐	☐
What country are we in?	☐	☐
What province are we in?	☐	☐
		Total ———

Immediate Recall

I would like to test your memory.

(ball, flag, tree) Can you repeat the words I said? *(1 point per word)*

Ball	☐	☐
Flag	☐	☐
Tree	☐	☐
		Total ———

Attention and calculation

A- Please begin with 100 and count backwards by 7. Stop after 5 answers.

93	☐	☐
86	☐	☐
79	☐	☐
72	☐	☐
65	☐	☐
		Total ———

Delayed Verbal Recall

What were the three words I asked you to say earlier?

	☐	☐

Ball

Flag ☐ ☐

Tree ☐ ☐

Total ——

Language Naming Repeating

A- Please name the following objects

Watch ☐ ☐

Pencil ☐ ☐

B- Repeat the following: "no ifs, ands or buts" ☐ ☐

Total ——

Three stage command

Take this paper in you left (or right) hand, fold it in half, and place it on the floor.

Takes ☐ ☐

Folds ☐ ☐

Puts ☐ ☐

Total ——

Reading

(show card or write: "Close your Eyes") Read this sentence and do what it says.

Close his/her eyes or not ☐ ☐

Total ——

Writing

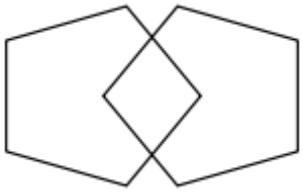
Now can you write a short sentence for me?

☐ ☐

Total ——

Construction

Will you copy this drawing please?



☐ ☐

Total Score: ———30–

Appendix 3: Bombing Experience Questionnaire

Please answer the following questions concerning the bombing attack:

1.	Before the bombing attack, did you anticipate that you would be involved in a bombing attack one day?	Yes			No
2.	Before the bombing attack, did you know anyone who died or sustained an injury in a bombing attack?	Yes			No
3.	Were you with anyone you know when the bomb exploded?	Yes			No
4.	Were you injured during the attack?	Yes			No
5.	If so, which parts of your body were injured?	Name injured body parts _____			
6.	Was the injury painful?	Not at all	A little bit	Moderately	Severely
7.	During the attack, did you feel confused?	Not at all	A little bit	Moderately	Completely
8.	During the attack, did you feel you lost control of yourself?	Not at all	A little bit	Moderately	Completely
9.	Did you feel isolated and alone during the attack?	Not at all	A little bit	Moderately	Completely
10.	Were you covered with dark and dusty smoke from the bombing?	Yes			No
11.	Were you unconscious during the attack?	Yes			No
12.	Did you see people exploded into pieces?	Yes			No
13.	Did you feel that you were going to die during the attack?	Yes			No
14.	Were you horrified by what you saw during the attack?	Not at all	A little bit	Moderately	A great deal
15.	Did you see body remains?	Yes			No
16.	Did you see people severely injured?	Yes			No
17.	Did anyone you know die in the bombing?	Yes			No
18.	Did anyone you know sustain an injury during the bombing?	Yes			No

19.	Did you try to rescue other victims after the bombing?		Yes		No
20.	Were you taken to a hospital?		Yes		No
21.	Did you leave the site of bombing without seeking medical care?		Yes		No
22.	Are you angry about what happened to you?	Not at all	A little bit	Moderately	A great deal
23.	Are you worried that you might experience another bombing?	Not at all	A little bit	Moderately	A great deal
24.	Do you think your life is in danger?	Not at all	A little bit	Moderately	A great deal
25.	Do you deliberately stay at home and avoid going out in case you experience another bombing?	Not at all	Sometime	Often	Very often
26.	Do you feel that the bombing attack have changed you as a person?	Not at all	A little bit	Moderately	A great deal

Appendix 4: PDS

PART 1: Focusing on your experience of the bombing attack

How many times have you been exposed to a bombing attack? _____

How long ago (approximately) did the bombing happen? _____

During this bombing:

	Yes	No
Were you physically injured?		
Was someone else physically injured?		
Did you think that your life was in danger?		
Did you think that someone else's life was in danger?		
Did you feel helpless?		
Did you feel terrified?		

Below is a list of problems that people sometimes experience after a bombing attack. Keeping in mind the bombing attack, please circle the number (0-3) that best describes how often the event has bothered you.

0 not at all **1** once in a while/once a week or less **2** half the time/ 2 to 4 times a week **3** almost always/ 5 or more times a week

1) Having upsetting thoughts or images about the bombing that come into your head when you don't want them to.	0	1	2	3
2) Having bad dreams or nightmares about the bombing.	0	1	2	3
3) Reliving the bombing, acting or feeling as if it was happening again.	0	1	2	3
4) Feeling emotionally upset when you are reminded of the bombing (e.g. feeling scared, angry, sad, guilty etc).	0	1	2	3
5) Experiencing physical reactions when you are reminded of the bombing (e.g. breaking out into a sweat, heart beating fast).	0	1	2	3
6) Trying not to think about, talk about or have feelings about the bombing.	0	1	2	3
7) Trying to avoid activities, people, or places that remind you of the bombing.	0	1	2	3
8) Not being able to remember an important part of the bombing.	0	1	2	3
9) Having much less interest or participating much less often in important activities.	0	1	2	3
10) Feeling distant or cut off from people around you.	0	1	2	3
11) Feeling emotionally numb (e.g. being unable to cry or unable to have loving feelings).	0	1	2	3
12) Feeling as if your future plans and hopes will not come true.	0	1	2	3
13) Having trouble falling or staying asleep.	0	1	2	3
14) Feeling irritable or having fits of anger.	0	1	2	3
15) Having trouble concentrating (e.g. drifting in and out of conversations, losing track of a story on television, and forgetting what you read).	0	1	2	3
16) Being overly alert (e.g. checking to see who is around you, being uncomfortable with your back to a door, etc).	0	1	2	3
17) Being jumpy or easily startled (e.g. when someone walks up behind you).	0	1	2	3

How long have you been experiencing the problems that you reported above? (Circle one)

1. Less than 1 month
2. 1 to 3 months
3. More than 3 months

How long after the bombing attack did these problems begin? (Circle one)

1. Less than 6 months **2.** 6 or more months

Indicate below if the problems you rated have interfered with any of the following areas of your life since your bomb attack. Please tick Yes or No.

	Yes	No
Work		
Household chores and duties		
Relationships with friends		
Fun and leisure activities		
Schoolwork		
Relationships with your family		
Sex life		
General satisfaction with life		
Overall level of functioning in all areas of your life		

PART 2: In addition to the bombing attack, did you experience any of the following dangerous events? Put a mark in the box next to ALL of the events that have happened to you or that you have witnessed.

	Please ✓
1) Serious accident, fire, (e.g. an industrial, farm, home, car, plane, train or boating accident)	
2) Natural disaster (e.g. tornado, hurricane, flood or major earthquake)	
3) Adult physical assault or abuse (e.g. being mugged, physically attacked, shot, stabbed, hit, beaten up or held at gunpoint)	
4) Child physical assault or abuse (e.g. being mugged, physically attacked, shot, stabbed, hit, beaten up or held at gunpoint)	
5) Adult sexual assault (e.g. rape or attempted rape or made to perform any type of sexual act through force or threat of harm)	
6) Child sexual assault (e.g. rape or attempted rape or made to perform any type of sexual act through force or threat of harm)	
7) Combat	
8) Imprisonment	
9) Torture	
10) Captivity (e.g. being kidnapped, abducted, held hostage, prisoner of war)	
11) Life-threatening illness or injury	
12) Sudden, violent death (e.g. homicide, suicide)	
13) Sudden, unexpected death of someone close to you	
14) Serious injury, harm or death you caused to someone else	
15) Exposure to toxic substance (e.g. dangerous chemicals, radiation)	
16) Other traumatic event	
17) If you marked item 16, please specify the traumatic event below	

If you marked more than one traumatic event above, put a mark in the box below next to the event that *bothers you the most*. If you marked only one traumatic event, make the same one in the box.

- □ Serious accident
- □ Natural disaster
- □ Adult physical assault/abuse
- □ Child physical assault/abuse
- □ Adult sexual assault/abuse
- □ Child sexual assault/abuse
- □Combat experience
- □ Imprisonment
- □ Torture
- □ Captivity
- □ Life threatening illness or injury
- □ Sudden or violent death
- □ Sudden, unexpected death of someone close
- □ Serious injury, harm or death you caused
- □ Exposure to toxic substance
- □ Other traumatic event

How long ago (approximately) did the traumatic event happen? _____
During the traumatic event:

	Yes	No
Were you physically injured?		
Was someone else physically injured?		
Did you think that your life was in danger?		
Did you think that someone else's life was in danger?		
Did you feel helpless?		
Did you feel terrified?		

Below is a list of problems that people sometimes experience after a traumatic event. Keeping in mind the traumatic event (described above) which bothers you the most, please circle the number (0-3) that best describes how often the event has bothered you.

0 not at all **1** once in a while/once a week or less **2** half the time/ 2 to 4 times a week **3** almost always/ 5 or more times a week

1) Having upsetting thoughts or images about the traumatic event that come into your head when you don't want them to.	0	1	2	3
2) Having bad dreams or nightmares about the traumatic event.	0	1	2	3
3) Reliving the traumatic event, acting or feeling as if it was happening again.	0	1	2	3
4) Feeling emotionally upset when you are reminded of the traumatic event (e.g. feeling scared, angry, sad, guilty etc).	0	1	2	3
5) Experiencing physical reactions when you are reminded of the traumatic event (e.g. breaking out into a sweat, heart beating fast).	0	1	2	3
6) Trying not to think about, talk about or have feelings about the traumatic event.	0	1	2	3
7) Trying to avoid activities, people, or places that remind you of the traumatic event.	0	1	2	3
8) Not being able to remember an important part of the traumatic event.	0	1	2	3
9) Having much less interest or participating much less often in important activities.	0	1	2	3
10) Feeling distant or cut off from people around you.	0	1	2	3
11) Feeling emotionally numb (e.g. being unable to cry or unable to have loving feelings).	0	1	2	3
12) Feeling as if your future plans and hopes will not come true.	0	1	2	3
13) Having trouble falling or staying asleep.	0	1	2	3
14) Feeling irritable or having fits of anger.	0	1	2	3
15) Having trouble concentrating (e.g. drifting in and out of conversations, losing track of a story on television, and forgetting what you read).	0	1	2	3
16) Being overly alert (e.g. checking to see who is around you, being uncomfortable with your back to a door, etc).	0	1	2	3
17) Being jumpy or easily startled (e.g. when someone walks up behind you).	0	1	2	3

How long have you been experiencing the problems that you reported above? (Circle one)
1. Less than 1 month **2.** 1 to 3 months **3.** more than 3 months

How long after the traumatic event did these problems begin? (Circle one)

1. Less than 6 months **2.** 6 or more months

Indicate below if the problems you rated have interfered with any of the following areas of your life since your traumatic event. Please tick Yes or No.

	Yes	No
Work		
Household chores and duties		
Relationships with friends		
Fun and leisure activities		
Schoolwork		
Relationships with your family		
Sex life		
General satisfaction with life		
Overall level of functioning in all areas of your life		

Appendix 5: GHQ-28

I would like to know if you have had any medical complaints and how your health has been since the bombing attack. Please answer ALL of the following questions simply by circling the response which you think most closely applies to you.

Have you recently …

Been feeling perfectly well and in good health?	Better than usual	Same as usual	Worse than usual	Much worse than usual
Been feeling in need of a good tonic?	Not at all	No more than usual	Rather more than usual	Much more than usual
Been feeling run down and out of sorts?	Not at all	No more than usual	Rather more than usual	Much more than usual
Felt that you are ill	Not at all	No more than usual	Rather more than usual	Much more than usual
Been getting any pains in your head?	Not at all	No more than usual	Rather more than usual	Much more than usual
Been getting a feeling of tightness or pressure in your head?	Not at all	No more than usual	Rather more than usual	Much more than usual
Been having hot or cold spells?	Not at all	No more than usual	Rather more than usual	Much more than usual
Lost much sleep over worry?	Not at all	No more than usual	Rather more than usual	Much more than usual
Had difficulty in staying asleep once you are off?	Not at all	No more than usual	Rather more than usual	Much more than usual
Felt constantly under strain?	Not at all	No more than usual	Rather more than usual	Much more than usual
Been getting edgy and bad tempered?	Not at all	No more than usual	Rather more than usual	Much more than usual
Been getting scared or panicky for no good reason?	Not at all	No more than usual	Rather more than usual	Much more than usual
Found everything getting on top of you?	Not at all	No more than usual	Rather more than usual	Much more than usual
Been feeling nervous and strung-up all the time?	Not at all	No more than usual	Rather more than usual	Much more than usual
Been managing to keep yourself busy and occupied?	More so than usual	Same as usual	Rather less than usual	Much less than usual
Been taking longer over things you do?	Quicker than usual	Same as usual	Longer than usual	Much longer than usual
Felt on the whole you were doing things well?	Better than usual	About the same	Less well than usual	Much less well
Been satisfied with the way you've carried out your task?	More satisfied	About same as usual	Less satisfied than usual	Much less satisfied
Felt that you are playing a useful part in things?	More so than usual	Same as usual	Less useful than usual	Much less useful
Felt capable of making decisions about things?	More so than usual	Same as usual	Less so than usual	Much less capable
Been able to enjoy your normal day-to-day activities?	More so than usual	Same as usual	Less so than usual	Much less than usual
Been thinking of yourself as a worthless	Not at all	No more	Rather more	Much more

person?		than usual	than usual	than usual
Felt that life is entirely hopeless?	Not at all	No more than usual	Rather more than usual	Much more than usual
Felt that life isn't worth living?	Not at all	No more than usual	Rather more than usual	Much more than usual
Thought of the possibility that you might make away with yourself?	Definitely not	I don't think so	Has crossed my mind	Definitely have
Found at times you couldn't do anything because your nerves were too bad?	Not at all	No more than usual	Rather more than usual	Much more than usual
Found yourself wishing you were dead and away from it all?	Not at all	No more than usual	Rather more than usual	Much more than usual
Found that the idea of taking your own life kept coming into your mind?	Definitely not	I don't think so	Has crossed my mind	Definitely has

Appendix 6: RSQ-30

Please read of the following statements and rate the extent to which it descrides your feelings about close relationships. Think about all of your close relationships and respond in terms of how you genarelly feel in these relationships.

		Not at all like me	Rarely like me	Somewhat like me	Often like me	Very much like me
1.	I find it difficult to depend on other people.	1	2	3	4	5
2.	It is very important to me to feel independent.	1	2	3	4	5
3.	I find it easy to get emotionally close to others.	1	2	3	4	5
4.	I want to merge completely with another person.	1	2	3	4	5
5.	I worry that I will be hurt if I allow myself to become too close to others.	1	2	3	4	5
6.	I am comfortable without close emotional relationships.	1	2	3	4	5
7.	I am not sure that I can always depend on others to be there when I need them.	1	2	3	4	5
8.	I want to be completely emotionally intimate with others.	1	2	3	4	5
9.	I worry about being alone.	1	2	3	4	5
10.	I am comfortable depending on other people.	1	2	3	4	5
11.	I often worry that romantic partners don't really love me.	1	2	3	4	5
12.	I find it difficult to trust others completely.	1	2	3	4	5
13.	I worry about others getting too close to me.	1	2	3	4	5
14.	I want emotionally close relationships.	1	2	3	4	5
15.	I am comfortable having other people depend on me.	1	2	3	4	5
16.	I worry that others don't value me as much as I value them.	1	2	3	4	5
17.	People are never there when you need them.	1	2	3	4	5
18.	My desire to merge completely sometimes scares people away.	1	2	3	4	5
19.	It is very important to me to feel self-sufficient.	1	2	3	4	5
20.	I am nervous when anyone gets too close to me.	1	2	3	4	5
21.	I often worry that romantic partners won't want to stay with me.	1	2	3	4	5
22.	I prefer not to have other people depend on me.	1	2	3	4	5
23.	I worry about being abandoned.	1	2	3	4	5
24.	I am somewhat uncomfortable being close to others.	1	2	3	4	5
25.	I find that others are reluctant to get as close as I would like.	1	2	3	4	5
26.	I prefer not to depend on others.	1	2	3	4	5
27.	I know that others will be there when I need them.	1	2	3	4	5
28.	I worry about having others not accept me.	1	2	3	4	5
29.	People often want me to be closer than I feel comfortable being.	1	2	3	4	5
30.	I find it relatively easy to get close to others.	1	2	3	4	5

Appendix 7: IASC

This questionnaire lists a number of experiences people sometimes have in their lives. Some of these are experiences people have with other people, and some are experiences that people have on their own. On your answer sheet, please circle the one answer that best indicates how often each of these experiences has happened to you in ***since the bombing***.

Since the bombing, how often have you experienced the following:

		Never	Once or Twice	Sometimes	Often	Very Often
1.	Problems in your relationships with people.	1	2	3	4	5
2.	Suddenly hating someone you used to like a lot.	1	2	3	4	5
3.	Feeling afraid that someone you cared about might leave you.	1	2	3	4	5
4.	Feeling like you didn't know yourself very well.	1	2	3	4	5
5.	Being easily influenced by others.	1	2	3	4	5
6.	Not being able to calm yourself down.	1	2	3	4	5
7.	Throwing or hitting things during an argument as a way of getting your anger out.	1	2	3	4	5
8.	Not getting along with people.	1	2	3	4	5
9.	Looking up to people and then being very disappointed by them.	1	2	3	4	5
10.	Feeling abandoned by people.	1	2	3	4	5
11.	Wishing you understood yourself better.	1	2	3	4	5
12.	Being talked into something too easily.	1	2	3	4	5
13.	Having a hard time calming down once you get upset.	1	2	3	4	5
14.	Hurting yourself as a way of getting rid of upsetting feelings or thoughts.	1	2	3	4	5
15.	Getting into arguments with people.	1	2	3	4	5
16.	Finding out that people you thought were wonderful really weren't wonderful at all.	1	2	3	4	5
17.	Worrying that someone was trying to end their relationship with you.	1	2	3	4	5
18.	Feeling like you don't understand your own	1	2	3	4	5

	behavior.					
19.	Being talked into doing something that you really didn't want to do.	1	2	3	4	5
20.	Being out of control emotionally.	1	2	3	4	5
21.	Eating more food than you needed in order to feel better or to calm down.	1	2	3	4	5
22.	Having a lot of ups and downs in your relationships with people.	1	2	3	4	5
23.	Thinking someone was much better than they really were.	1	2	3	4	5
24.	Doing just about anything to keep someone from leaving you.	1	2	3	4	5
25.	Getting confused about what you want in life.	1	2	3	4	5
26.	Agreeing with people too easily.	1	2	3	4	5
27.	Not being able to control your anger.	1	2	3	4	5
28.	Hurting yourself in some way in order to calm yourself down or to stop feeling empty.	1	2	3	4	5
29.	Conflict in your relationships.	1	2	3	4	5
30.	Your feelings about people changing quickly from good to bad.	1	2	3	4	5
31.	Thinking someone didn't care about you anymore even though they said they did.	1	2	3	4	5
32.	Feeling like you don't really have an identity.	1	2	3	4	5
33.	Believing what someone told you, even though it didn't make sense.	1	2	3	4	5
34.	Wishing you could calm down but not being able to.	1	2	3	4	5
35.	Getting into a fight just to get your anger out.	1	2	3	4	5
36.	Becoming upset with a friend or lover.	1	2	3	4	5
37.	Putting someone on a pedestal and then finding out that they weren't who they pretended to be.	1	2	3	4	5

38.	Being afraid someone would stop loving you.	1	2	3	4	5
39.	Losing track of who you are and what you want when you are with other people.	1	2	3	4	5
40.	Wishing you weren't so easily led by others.	1	2	3	4	5
41.	Your moods changing quickly.	1	2	3	4	5
42.	Using sex as a way to stop feeling bad.	1	2	3	4	5
43.	Having trouble getting along with people at work, school, or in your neighbourhood.	1	2	3	4	5
44.	Thinking someone was much more interesting than they actually turned out to be.	1	2	3	4	5
45.	Getting very upset when someone seemed like they were trying to pull away from you.	1	2	3	4	5
46.	Getting confused about what you want when you are with other people.	1	2	3	4	5
47.	Letting other people tell you what to do.	1	2	3	4	5
48.	Having many ups and downs in your feelings.	1	2	3	4	5
49.	Doing things to stop feelings so much pressure or pain inside.	1	2	3	4	5
50.	Having disagreements with people.	1	2	3	4	5
51.	Feeling disappointed by people after you got to know them.	1	2	3	4	5
52.	Feeling empty when people went away from you.	1	2	3	4	5
53.	Feeling like you become a different person when you are with certain people.	1	2	3	4	5
54.	Doing something because someone told you to, even though you didn't have to and didn't want to.	1	2	3	4	5
55.	Being very angry one minute and then feeling fine the next.	1	2	3	4	5
56.	Doing something sexual in order to calm yourself down.	1	2	3	4	5

57.	Getting into fights with people.	1	2	3	4	5
58.	Wishing people would say as exciting as when you first met them.	1	2	3	4	5
59.	Feeling angry when you felt someone didn't want to spend time with you anymore.	1	2	3	4	5
60.	Losing your identity when you are in a relationship.	1	2	3	4	5
61.	Doing what someone said without stopping to think if it was a good idea.	1	2	3	4	5
62.	Becoming happy for short periods of time but it not lasting.	1	2	3	4	5
63.	Doing something dramatic to distract yourself.	1	2	3	4	5

Appendix 8: WAS

Please rate the following statements on how much you agree or disagree with them.

	Strongly Agree	Agree	Slightly Agree	Slightly Disagree	Disagree	Strongly Disagree
Most people can be trusted.	1	2	3	4	5	6
I don't feel in control of the events that happen to me.	1	2	3	4	5	6
You usually can know what is going to happen in your life.	1	2	3	4	5	6
It is difficult for me to take most of what people say at face-value.	1	2	3	4	5	6
It is very difficult to know what others are thinking.	1	2	3	4	5	6
Anyone can experience a very bad event.	1	2	3	4	5	6
People often behave in unpredictable ways.	1	2	3	4	5	6
People are less safe than they usually realize.	1	2	3	4	5	6
For the most part, I believe people are good.	1	2	3	4	5	6
I have a great deal of control over what will happen to me in my life.	1	2	3	4	5	6
You never know what's going to happen tomorrow.	1	2	3	4	5	6
Other people are usually trustworthy.	1	2	3	4	5	6
People's lives are very fragile.	1	2	3	4	5	6
It is hard to know exactly what motivates another person.	1	2	3	4	5	6
Most people cannot be trusted.	1	2	3	4	5	6
People fool themselves into feeling safe.	1	2	3	4	5	6
It is hard to understand why people do what they do.	1	2	3	4	5	6
Most of what happens to me happens because I choose it.	1	2	3	4	5	6
Terrible things might happen to me.	1	2	3	4	5	6
It is ultimately up to me to determine how events in my life will happen.	1	2	3	4	5	6
It can be very difficult to predict other people's behavior.	1	2	3	4	5	6
What people say and what they do are often very different things.	1	2	3	4	5	6

Appendix 9: CSS

I would like to ask you a few questions about your family and friends, the people who have turned to for help, advice, and support since the bombing. Below are various people who may be important in your life. Each question asks about the support you received just after the bombing and at the present time. Each question has seven answer choices ranging from Never to Always. Now, thinking about those people you have turned to for help, advice, and support...

	Never	**Very seldom**	**Seldom**	**Sometimes**	**Often**	**Very often**	**Always**
Whenever you wanted to talk how often was there someone willing to listen *just after the bombing?*	1	2	3	4	5	6	7
Whenever you want to talk how often is there someone willing to listen *at the present time?*	1	2	3	4	5	6	7
Did you have personal contact with other survivors or people with a similar experience *just after the bombing?*	1	2	3	4	5	6	7
Do you have personal contact with other survivors or people with similar experience *at the present time?*	1	2	3	4	5	6	7
Were you able to talk about your thoughts and feelings *just after the bombing?*	1	2	3	4	5	6	7
Are you able to talk about your thoughts and feelings *at the present time?*	1	2	3	4	5	6	7
Were people sympathetic and supportive *just after the bombing?*	1	2	3	4	5	6	7
Are people sympathetic and supportive *at the present time?*	1	2	3	4	5	6	7
Were people helpful in a practical sort of way *just after the bombing?*	1	2	3	4	5	6	7
Are people helpful in a practical sort of way *at the present time?*	1	2	3	4	5	6	7
Did people you expected to be supportive make you feel worse at any time *just after the bombing?*	1	2	3	4	5	6	7
Do people you expected to be supportive make you feel worse at any time *at the present time*?	1	2	3	4	5	6	7

Appendix 10: MFODS

Listed below are death-related events and circumstances that some people find to be fear-evoking. Indicated the extent to which you agree or disagree with each statement by circling one number for each item.

1=Strongly agree; 2=Mildly agree; 3=Neither agree nor disagree; 4=Mildly disagree; 5=Strongly disagree

1.	I am afraid of dying very slowly.	1	2	3	4	5
2.	I dread visiting a funeral home.	1	2	3	4	5
3.	I would like to donate my body to science.	1	2	3	4	5
4.	I have a fear of people in my family dying.	1	2	3	4	5
5.	I am afraid that there is no afterlife.	1	2	3	4	5
6.	There are probably many people pronounced dead that are really still alive.	1	2	3	4	5
7.	I am afraid of my body being disfigured when I die.	1	2	3	4	5
8.	I have a fear of not accomplishing my goals in life before dying.	1	2	3	4	5
9.	I am afraid of meeting my creator.	1	2	3	4	5
10.	I am afraid of being buried alive.	1	2	3	4	5
11.	I dread the thought of my body being embalmed someday.	1	2	3	4	5
12.	I am afraid I will not live long enough to enjoy my retirement.	1	2	3	4	5
13.	I am afraid of dying in a fire.	1	2	3	4	5
14.	Touching a corpse would not bother me.	1	2	3	4	5
15.	I do not want medical students using my body for practice after I die.	1	2	3	4	5
16.	If the people I am very close to were to die suddenly, I would suffer for a long time.	1	2	3	4	5
17.	If I were to die tomorrow, my family would be upset for a long time.	1	2	3	4	5
18.	I am afraid that death is the end of one's existence.	1	2	3	4	5
19.	People should have autopsies to ensure that they are dead.	1	2	3	4	5
20.	The thought of my body being found after I die scares me.	1	2	3	4	5
21.	I am afraid I will not have time to experience everything I want to.	1	2	3	4	5
22.	I am afraid of experiencing a great deal of pain when I die.	1	2	3	4	5
23.	Discovering a dead body would be a horrifying experience.	1	2	3	4	5
24.	I do not like the thought of being cremated.	1	2	3	4	5
25.	Since everyone dies, I won't be too upset when my friends die.	1	2	3	4	5
26.	I would be afraid to walk through a graveyard, alone, at night.	1	2	3	4	5
27.	I am afraid of dying of cancer.	1	2	3	4	5
28.	It does not matter where I will be buried.	1	2	3	4	5
29.	It scares me to think I may be conscious while lying in a morgue.	1	2	3	4	5
30.	I am afraid that there may not be a Supreme Being.	1	2	3	4	5
31.	I have a fear of suffocating (including drowning).	1	2	3	4	5
32.	It would bother me to remove a dead animal from the road.	1	2	3	4	5
33.	I do not want to donate my eyes after I die.	1	2	3	4	5

34.	I sometimes get upset when acquaintances die.	1	2	3	4	5
35.	The thought of being locked in a coffin after I die scares me.	1	2	3	4	5
36.	No one can say, for sure, what will happen after death.	1	2	3	4	5
37.	If I die, my friends would be upset for a long time.	1	2	3	4	5
38.	I hope more than one doctor examines me before I am pronounced dead.	1	2	3	4	5
39.	I am afraid of things which have died.	1	2	3	4	5
40.	The thought of my body decaying after I die scares me.	1	2	3	4	5
41.	I am afraid I may never see my children grow up.	1	2	3	4	5
42.	I have a fear of dying violently.	1	2	3	4	5

Appendix 11: BARCS

Please read each statement carefully and selected how often you have engaged in the following behaviours after the bombing.

		not used at all/does not apply	**used sometimes**	**used often**	**used always**
		0	**1**	**2**	**3**
1.	I prayed for strength.	**0**	**1**	**2**	**3**
2.	I looked for a lesson from God in the situation.	**0**	**1**	**2**	**3**
3.	I got help from religious leader/s.	**0**	**1**	**2**	**3**
4.	I recalled a passage from a religious text (e.g. Quran).	**0**	**1**	**2**	**3**
5.	I attended events at the mosque.	**0**	**1**	**2**	**3**
6.	I put my problem in God's hands.	**0**	**1**	**2**	**3**
7.	I increased my prayers to God.	**0**	**1**	**2**	**3**
8.	I attended religious classes (e.g. Islamic halaqa).	**0**	**1**	**2**	**3**
9.	I tried to make up for my mistakes.	**0**	**1**	**2**	**3**
10.	I asked God for a blessing.	**0**	**1**	**2**	**3**
11.	I used a religious story to help solve the problem.	**0**	**1**	**2**	**3**
12.	I shared my religious beliefs with others.	**0**	**1**	**2**	**3**
13.	I donated time to a religious cause or activity.	**0**	**1**	**2**	**3**
14.	I looked for love and concern from the members of my mosque.	**0**	**1**	**2**	**3**
15.	I prayed to get my mind off my problem/s.	**0**	**1**	**2**	**3**

Appendix 12: CRI

This questionnaire aims to assess different strategies you used to cope with effect of the bombing.

Please answer all the questions and there are no right or wrong answers.

Part I

Please answer the following questions by place an "✓" in the appropriate box.

	Definitely NO	**Mainly NO**	**Mainly YES**	**Definitely YES**
	0	**1**	**2**	**3**
Have you ever faced a problem like this before?	**0**	**0**	**0**	**0**
Did you know this problem was going to occur?	**1**	**1**	**1**	**1**
Did you have enough time to get ready to handle this problem?	**2**	**2**	**2**	**2**
When this problem occurred, did you think of it as a threat?	**3**	**3**	**3**	**3**
When this problem occurred, did you think it as a challenge?	**0**	**0**	**0**	**0**
Was this problem caused by something you did?	**1**	**1**	**1**	**1**
Was this problem caused by someone else did?	**2**	**2**	**2**	**2**
Did anything good come out of dealing with this problem?	**3**	**3**	**3**	**3**
Has this problem or situation been resolved?	**0**	**0**	**0**	**0**
If the problem has been worked out, did it turn out all right for you?	**1**	**1**	**1**	**1**

Part II

Please think again about the bombing and indicate how you coped with it.

Did you		No	Yes, Once or twice	Yes, Some-times	Yes, Fairly often
		0	**1**	**2**	**3**
1.	Think of different ways to deal with the bombing?	**0**	**1**	**2**	**3**
2.	Tell yourself things to make yourself better?	**0**	**1**	**2**	**3**
3.	Talk with your husband/wife or other relative about the bombing?	**0**	**1**	**2**	**3**
4.	Make a plan of action and follow it?	**0**	**1**	**2**	**3**
5.	Try to forget the whole thing?	**0**	**1**	**2**	**3**
6.	Feel that time would make a difference-the only thing to do was wait?	**0**	**1**	**2**	**3**
7.	Try to help others deal with a similar problem?	**0**	**1**	**2**	**3**
8.	Take it out on other people when you felt angry or depressed?	**0**	**1**	**2**	**3**
9.	Try to step back from the situation and be more objective?	**0**	**1**	**2**	**3**
10.	Remind yourself how much worse things could be?	**0**	**1**	**2**	**3**
11.	Talk with a friend about the bombing?	**0**	**1**	**2**	**3**
12.	Know what had to be done and try hard to make things work?	**0**	**1**	**2**	**3**
13.	Try not to think about the bombing?	**0**	**1**	**2**	**3**
14.	Realize that you had no control over the bombing?	**0**	**1**	**2**	**3**
15.	Get involved in new activities?	**0**	**1**	**2**	**3**
16.	Take a chance and do something risky?	**0**	**1**	**2**	**3**
17.	Go over in your mind what you would say or do?	**0**	**1**	**2**	**3**
18.	Try to see the good side of the situation?	**0**	**1**	**2**	**3**
19.	Talk with a professional person (e.g. doctor, lawyer, clergy)	**0**	**1**	**2**	**3**
20.	Decide what you wanted and try hard to get it?	**0**	**1**	**2**	**3**
21.	Daydream or imagine a better time or place than the one you were in?	**0**	**1**	**2**	**3**
22.	Think that the outcome would be decided by fate?	**0**	**1**	**2**	**3**

23.	Try to make new friends?	**0**	**1**	**2**	**3**
24.	Keep away from people in general?	**0**	**1**	**2**	**3**
25.	Try to anticipate how things would turn out?	**0**	**1**	**2**	**3**
26.	Think about how you were much better off than other people with similar problems?	**0**	**1**	**2**	**3**
27.	Seek help from persons or groups with the same type of problem?	**0**	**1**	**2**	**3**
28.	Try at least two different ways to solve the problem?	**0**	**1**	**2**	**3**
29.	Try to put off thinking about the bombing, even though you know you would have to at some point?	**0**	**1**	**2**	**3**
30.	Accept it; nothing could be done?	**0**	**1**	**2**	**3**
31.	Read more often as a source of enjoyment?	**0**	**1**	**2**	**3**
32.	Yell or shout to let off steam?	**0**	**1**	**2**	**3**
33.	Try to find some personal meaning in the situation?	**0**	**1**	**2**	**3**
34.	Try to tell yourself that things would get better?	**0**	**1**	**2**	**3**
35.	Try to find out more about the situation?	**0**	**1**	**2**	**3**
36.	Try to learn to do more things on your own?	**0**	**1**	**2**	**3**
37.	Wish the problem would go away or somehow be over with?	**0**	**1**	**2**	**3**
38.	Expect the worst possible outcome?	**0**	**1**	**2**	**3**
39.	Spend more time in recreational activities?	**0**	**1**	**2**	**3**
40.	Cry to let your feelings out?	**0**	**1**	**2**	**3**
41.	Try to anticipate the new demands that would be placed on you?	**0**	**1**	**2**	**3**
42.	Think about how this event could change your life in a positive way?	**0**	**1**	**2**	**3**
43.	Pray for guidance and/or strength?	**0**	**1**	**2**	**3**
44.	Take things a day at a time, one step at a time?	**0**	**1**	**2**	**3**
45.	Try to deny how serious the bombing really was?	**0**	**1**	**2**	**3**
46.	Lose hope that things would ever be the same?	**0**	**1**	**2**	**3**
47.	Turn to work or other activities to help you manage things?	**0**	**1**	**2**	**3**
48.	Do something that you didn't think would work, but at least you were doing something?	**0**	**1**	**2**	**3**

Appendix 13: MLQ

Please take a moment to think about what makes your life feel important to you. Please respond to the following statements as truthfully and accurately as you can, and also please remember that these are very subjective questions and that there are no right or wrong answers. Please answer according to the scale below:

Absolutely untrue (1); Mostly untrue (2); Somewhat untrue (3); Can't say true or false (4); Somewhat true (5); Mostly true (6); Absolutely true (7)

1.	I understand my life's meaning.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
2.	I am looking for something that makes my life feel meaningful.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
3.	I am always looking to find my life's purpose.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
4.	My life has a clear sense of purpose.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
5.	I have a good sense of what makes my life meaningful.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
6.	I have discovered a satisfying life purpose.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
7.	I am always searching for something that makes my life feel significant.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
8.	I am seeking a purpose or mission for my life.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
9.	My life has no clear purpose.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
10.	I am searching for meaning in my life.	**1**	**2**	**3**	**4**	**5**	**6**	**7**